HOSPITAL
FOR
SPECIAL
SURGERY

Specialists
in Mobility

Application for the 2001

New York State

Hospital Patient Safety Awards

Submitted by:

The Hospital for Special Surgery

John R. Reynolds

John R. Reynolds, President and CEO

John R. Reynolds
President and
Chief Executive Officer

535 East 70th Street
New York, NY 10021
tel 212.606.1236
fax 212.794.2153
e-mail: reynoldsj@hss.edu

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July 20, 2001

Ms. Cathy Blake
Director of Quality Initiatives
Office of Health Systems Management
Room 1415, Corning Tower Building
Empire State Plaza
Albany, NY 12237

Dear Ms. Blake:

The Hospital for Special Surgery is pleased to enclose an original and seven copies of our application for the 2001 New York State Hospital Patient Safety Awards.

Over the years, we have successfully implemented a number of effective medical error reduction strategies as part of our facility-wide quality improvement efforts. Our staff is dedicated to process improvement and is anxious to share the results of their current efforts.

If you or your staff have any questions regarding this application, please contact Ms. Marion Hare, Vice President, at (212) 606-1236.

Sincerely,

John R. Reynolds
President and Chief Executive Officer

Enc.

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President and
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fax 212.794.2153
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Application for the 2001
New York State Hospital Patient Safety Awards

I. The Applicant

A. Name: Hospital for Special Surgery

B. Address: 535 East 70th Street
New York, NY 10021

C. Certified Beds: 160

D. Network Affiliation: The New York-Presbyterian Hospital System

The Hospital for Special Surgery (HSS) is a small teaching hospital which specializes in Orthopedics and Rheumatology and is widely recognized as one of the top hospitals in the world in these specialties. We have earned this reputation by focusing on the pursuit of quality as a guiding principal for all staff, enabling us to achieve one of the lowest risk-adjusted mortality rates in the country. Our involvement in the development and early adoption of clinical guidelines, care protocols, outcome measures, and quality indicators has enabled our staff to incorporate the latest research into our daily practice within months rather than years. Our patient centered philosophy has allowed us to integrate the patients themselves into their care team by better physical and psychological preparation[1] for elective surgery and better self care at home after surgery.

We look forward to working with the Department of Health in promoting medical error reduction strategies we have successfully implemented and to focus future quality improvement activities:

1. How to survive as a small facility by providing exceptional quality
2. How to incorporate continuous quality improvement into daily operations
3. How to foster a blame free culture when addressing medical errors
4. How to deal with measurement and reporting challenges for quality indicators and incident reporting
5. How to finance current and future quality improvement activities

In order to foster understanding of these major strategies, and how they play out in day-to-day operations, we have structured this application to address the overall national and statewide patient safety and quality environment, the process of process improvement at HSS, a case study describing one of the current efforts integrated into this process, and an outline of future goals both within our control and outside of it.

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[1] "Your Pathway to Recovery," our pre-operative Patient Education programs, provide a way for patients to meet key care givers and learn "hands-on" what to expect and what they can do to make their stay and recovery safe and less stressful.

II. The Environment: Patient Safety and Medical Error Reduction, Quality Measurement and Improvement

Interest in patient safety, medical error reduction, and quality measurement and improvement has blossomed in recent years. There are many initiatives and resources in both the public and private sector in this area. This environment provides a context which has shaped our quality improvement efforts as well as our outline of future goals for improvement.

The Institute of Medicine (IOM) recently published a series of Patient Safety and Quality Reports: "To Err is Human,"[a] which outlined the overall quality and safety problems of our health care system; "Crossing the Quality Chasm,"[b] which outlined the gaps between how care is delivered and how it could be delivered as well as the characteristics (e.g. 6 aims for improvement and 10 rules for redesign) which must be incorporated into redesigned systems of care; and "Envisioning the National Health Care Quality Report,"[c] which outlined the aspects, measures, and formats for presenting current and longitudinal quality measures. Summary findings were that errors are primarily a Systems problem rather than individual bad apples and that new clinical knowledge is typically incorporated into practice many years after it is developed.

Over the past decade, the New York State Department of Health (NYSDOH) has implemented a number of reporting systems: The Cancer Registries which are considered a Gold Standard for Cancer Incidence Reporting; the NYPORTS Incident Reporting System [d] - which has demonstrated industry-wide under-reporting, and the Cardiac Surgery reporting system - which is considered by many to be the Gold Standard for both reporting and risk adjusted outcome measures. NYPORTS identified that the degree of under-reporting is significant, with a benchmark showing only 16% of an easily identifiable occurrence (deaths within 48 hours of an operating room procedure) are reported.

The Secretary of the U.S. Department of Health and Human Services (HHS), Tommy G. Thompson, found similar under-reporting of patient safety data. In testimony to Congress given on May 24, 2001.[e] He indicated that after some fieldwork, only 10 percent of the actual incidents were being sent in.

The Agency for Healthcare Research and Quality (AHRQ) has been designated as the lead Federal agency within HHS for patient safety and quality improvement efforts. It provides a number of tools in the public domain to facilitate broad efforts in this area. The Healthcare Cost and Utilization Project (HCUP) provides access to a National Inpatient Sample (NIS) of hospital discharge data and the Medical Expenditure Panel Survey (MEPS) of detailed data from household interviews. It also provides tools to classify and use this data such as comorbidity measures and HCUP Quality Indicators (latest revision - other than complications of care - were released last week.) AHRQ is also responsible for dissemination of Clinical Practice Guidelines and Evidence reports, such as "Making Heathcare Safer: A Critical Analysis of Patient Safety Practices,"[f] which summarizes evidence for more widespread implementation of almost 80 specific patient safety practices. AHRQ is a co-sponsor for the Statewide Hospital Patient Safety Conference in September where this award will be publically announced.

The Institute for Healthcare Improvement (IHI) and its President, Donald M. Berwick, have been key players in encouraging and supporting the accelerated implementation of Quality Improvement efforts,[e] such as supporting the Robert Wood Johnson "Pursuing Perfection" initiative. Our CQI process outlined below is based in part upon some of his early work.[g]

There are a number of Private Sector Report Cards and Hospital Ranking "Benchmarks" now published in trade journals such as Modern Healthcare (100 Top Hospitals), general journals such as US News and World Reports (America's Best Hospitals), and the Internet (MedicalConsumers.com, HealthGrades.com.) Patient and Procedure volumes, clinical indicators of mortality, morbidity, co-morbidities, and adjustments for relative risk are largely based upon data from billing files such as the Medicare MEDPAR files. These are currently the only clinical data collected on hospital inpatients so are therefore widely used.

However, there is very sparse data included on the bills(hospital, physician, age, sex, location, diagnoses, procedures, length of stay, and charges.) This is far less than the wealth of clinical data available in the Minimum Data Set (MDS 2.0) for Skilled Nursing Facilities or the OASIS data set for Home Care. This significantly hampers any true efforts to develop meaningful, National, Risk adjusted Benchmarks for many of the Patient Safety Practices being targeted for widespread implementation. We agree that Computerized Physician Order Entry (CPOE) will provide a mechanism to collect this data easily in the future.

In the meantime, we strongly support better measures for at least a handful of significant risk factors (height and weight and/or Body Mass Index - BMI and smoking status.) There is significant evidence that these factors have a huge impact on quality risks in randomized clinical studies. The data is also readily available in the chart. We serve a disproportionate number of complex cases with weight problems (almost 10% of our patient population have an Obesity diagnosis versus less than 2% of our local Peer hospitals.) This concern is significant enough that we are implementing pre-operative Interdisciplinary Team meetings with these patients to pre-plan for potential risks and complications which may arise.

We have worked over the last few years on several initiatives to find methodologies to compensate for the significant under-reporting and inconsistent reporting of data in the billing data sets. For example, we found that one of the "complication" codes used widely as a quality indicator (997.2 - Peripheral Vascular Complications) actually measured whether a Hospital was conducting research in DVT prophylaxis. If you did, there was a high complication rate, if not the rate tended to be low.[h]

In another example, we found that our Spine Surgery Complications rate was unexpectedly high on our ORYX benchmarking reports. Examination found a significant discrepancy in reporting Dural Tears between providers. A significant number of high volume hospitals and surgeons reported NO Dural Tears and/or rates that did not vary significantly between high risk and low risk patients.

Our opportunities for fine tuning our error reduction strategy processes are constrained by the current under-reporting of incidents and complications. Meaningful comparisons are likely to be compromised until such time as general reporting accuracy rates are at least similar.[i]

III. The Process of Process Improvement at HSS

Overview

The Hospital for Special Surgery implemented a Continuous Quality Improvement program in 1994. The same approach is used for interdepartmental collaborative teams and teams within individual departments to facilitate process improvement. The model used is FOCUS-PDCA:

MODEL FOR PERFORMANCE IMPROVEMENT

F FIND a process to improve

O ORGANIZE to improve the process

C CLARIFY current knowledge of process variation

U UNDERSTAND sources of process variation

S SELECT the process improvement

P PLAN the improvement & the data collection

D DO the improvement

C CHECK the results

A ACT to hold the gain & continue improvement

The Hospital Committee on Quality Assessment and Performance Improvement coordinates the program through a Steering Committee structure and reports directly to the Board of Trustees (see Attachment A for a Table of Organization.)

Finding Processes to Improve

Suggestions for process improvement can be generated by ALL staff and submitted on standard forms, with priority ranking set using identified criteria (see Attachment A.) Over the years, assessment and process improvement projects have been initiated when a Sentinel event or near miss occurs, for major Sentinel Event Alerts, or when performance varies significantly from prior internal patterns or external benchmarks. There are typically 15 - 20 facility-wide projects in process each year, with many more within individual Departments.

Staff Training, Participation, and Empowerment

Training and educational classes in Continuous Quality Improvement are provided on an ongoing basis. In addition, CQI education is part of the orientation process for all new staff, is required for all team members involved in a Process Improvement Team (PIT Team), and encouraged for all other staff.

A typical PIT Team includes participation at all staff levels. **Team Leaders** are selected for their knowledge of the processes involved and their skills in integrating the knowledge of others on the team, rather than organizational position (senior management staff are specifically NOT

assigned as Team Leaders.) They are responsible for team collaboration (direct, motivate, and communicate with the team) and project management to assure the process is completed on schedule. The **Facilitator** on each team is selected by the Team to coach the process and keep discussion moving in team meetings. **Members** are selected from affected Departments for their knowledge of the process. Projects with clinical aspects include one or more **Physicians** as members. This is similar to the team performance model in aviation which facilitates human interaction.[fj]

Our structure empowers staff at all levels to actively participate in the Team decision making process. ALL staff learn to base decisions on the facts identified and data presented. Tasks are routinely assigned by junior staff to senior management staff where appropriate. Emphasis is on completing the project, not "following orders." This supports de-centralized decision making in a "flat hierarchy," another feature of aviation performance models.

Incorporating the CQI/PIT process into our basic management style, (and the necessary repeated exposure over time for the same staff given our small size) overcomes the "decay over time" found in the training based aviation models. It also helps to overcome resistance in any staff who are attached to hierarchy or are weak in achievement motivation or interpersonal skills.

Non-Punitive Approach to Error Management

No one likes to be blamed or be at fault, however, error is inevitable - particularly in highly complex processes which are also open to human error. HSS has encouraged incident reporting for many years in a non-punitive environment (including confidential reporting for any staff that remain uncomfortable.) The CQI/PIT process itself supports this, by focusing on process solutions and error management, rather than people and fixing blame. Comfort with this is a long term prospect ("Are you SURE I won't be fired if I report this?"), with observed progress over the years. Some anxiety remains, and possibly will always be there to some degree due to human nature as well as media and regulatory pressures (see discussion in our case study below.)

Complete and Timely Incident Reporting

Significant under-reporting of incidents and near misses (only 10 - 20 % actually reported) is a hot topic, given the recent focus by HHS, the GAO, and the NYSDOH mentioned above. We discovered that our hospital is one of the top reporters of incidents in the NYPORTS system. One of our staff was asked at a recent meeting on the topic by one of our local hospitals "How do you get anyone to report an incident?" The answer was same as any of our staff involved in this area gives - "We report so we can see a pattern, find the problem, fix it, and prevent it from happening again." A simple example helps to illustrate this. When a real problem exists, finding it usually requires seeing a pattern so we know where to look in a complex system. It takes (at minimum) a review of 5 - 20 cases to find the pattern. If only 10% of problems are reported, this means that 50 - 200 patients would have to be affected, and years rather than months for the pattern to be observed. By encouraging our staff to report all incidents in a non-punitive environment, we are able to quickly find problems when they occur and implement solutions. This is the essence of error management/risk management - prevent errors if possible, if an error occurs - catch it before it causes any harm, if harm is caused - minimize it and fix it quickly.

Maintain State of the Art Knowledge in All Staff and Implement Best Practices

All of the HSS staff are encouraged to subscribe to professional journals, attend and present at professional development conferences, and participate in basic scientific, clinical, and health services research. They are also empowered to incorporate good ideas that are evidence based into daily operations as soon as feasible (e.g. after Institutional Review Board or Budget approvals are obtained.) We performed our own mini-study of staff effectiveness this week

On Tuesday of this week, AHRQ released their 651 page report "Making Health Care Safer: A Critical Analysis of Patient Safety Practices." We evaluated the 42 practices ranked as High Impact in the report. Of the practices applicable to our patient population,[2] fully two-thirds have already been substantially implemented into our operations, another quarter have been partially implemented, and the remaining were already in the planning or discussion stages. Some highlights:

A. Computerized Physician Order Entry (See Case Study below)
B. Appropriate use of prophylaxis to prevent venous thromboembolism - Our staff have been significantly involved in basic research in this area and were referenced in the practice guideline[f]
C. Use of perioperative beta-blockers in appropriate patients to prevent perioperative morbidity and mortality - Our staff have published results of a randomized control trial demonstrating effectiveness of this.[k]
D. Use of pressure relieving bedding materials to prevent pressure ulcers - We replaced all of our beds in 1996 with Hill Rom Advance 2000 air fluidized beds. In addition, Nursing performed a within department PIT project which identified creases in the mattress covers causing a few residual pressure ulcers. Rates were reduced from 1.5 per 1,000 patient days in the first quarter of 1998 to an average of 0.15 per 1,000 days in 1999 to zero by the fall of 2000.
E. Localizing specific surgeries and procedures to high volume centers - This is a definition of our facility and our success strategy - How to survive as a small facility by providing exceptional quality. Our small size allows us the flexibility to implement the processes outlined above without the bureaucratic constraints which exist in larger facilities. At the same time, our specialization allows us to be a high volume center in our specialties. The exceptional quality we are therefore able to provide has enabled us to increase our volume each year (when overall volume in the industry is declining.) This volume growth has in turn enabled us to fund our quality improvement efforts in spite of the perverse incentives and disincentives inherent in the current payment processes.
F. Sign your site - We have had a "sign your limb" program in place since prior to initiating CQI in 1994.

We are proud that staff were aware of ALL of these practices and had already implemented most of them.

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[2] For example, we have few patient on ventilators after the peri-operative period, so these practices are not applicable.

IV. Case Study - Medication Errors Process Improvement Team

We selected this particular process, of the 18 current facility-wide SIP projects, for a variety of reasons. Medication errors have been identified as one of the most preventable threats to patient safety[a], therefore the issue is receiving national attention from the IOM, Congress, CMS, AHRQ, and the media. It is broadly applicable to all hospitals, large as well as small. Based upon informal contact with a number of our neighboring facilities, even our current findings can be broadly replicated in the short term. It provides easily understood examples of the major process and strategy issues noted above. A recently updated progress report is included in Attachment C.

Find a Process to Improve

The original project was initiated in July 2000 to examine and improve the hospital's process for medication use and for medication variance reporting. Like many of our SIP projects, it was initiated in response to external evidence of a potential industry-wide problem - in this case the IOM "To Err is Human" report. Our long term strategy is to move to the recommended Computerized Physician Order Entry (CPOE) system once we find both a system which meets our needs and the financial means to afford it.

In the meantime, we have currently implemented stand-alone systems covering high risk functions. At each nursing station, the OR, PACU, and other areas where medications may be ordered, we have access to Micromedex (for Drug/Drug and Drug/food interactions) and Clinstar (proper dosing tools linked to patient demographic information). The patient's other medications are included in both to assure full safety. We have the Pyxis system on each unit (automated dispensing). For each pediatric patient, we print an Emergency Dosing Sheet and include it in their chart. Interfacing between these systems is still manual, as are written orders, which are faxed to the Pharmacy. These latter areas are of most concern, since they are open to human error and the primary target for our review.

The efforts in this project serve several purposes. In addition to evaluating the quality of our current systems in a known medical error risk area, it offers the opportunity to immediately enhance these systems while waiting for CPOE implementation.. We do not currently have a firm time frame for implementing this process (which Chapter 6 of the AHRQ report released earlier this week agrees is both costly and complex.) Regarding this latter point, we see an additional benefit, since by fully evaluating and understanding this process now, we will be better positioned to make an informed decision regarding which system to acquire. This in-depth knowledge will also be needed to implement the system once acquired. Thus one project can provide all three benefits.

Organize a Team that Knows the Process, Observed Team Dynamics

An interdisciplinary team from Pharmacy, Nursing, Information Technology, Medicine, Surgery, Patient Care and Quality Management, Risk Management, and Administration was organized (see Attachment C, page 3 for Team Members.) This was the first PIT Team involvement for the Team Leader. There was some anxiety in "Leading" a new process as expected, particularly a senior management team, all of whom have been through the process together multiple times before. On the other hand, there was also some initial anxiety observed in "seasoned" team members as well. It was a new area, perhaps some residual defensiveness that the issues may be

found in "my" turf. These are common human reactions in our current litigious culture of Blame.

This initial anxiety quickly dissipated as the team followed the process. As more focus was placed on the facts of the process, there wass less focus on individual team feelings and anxiety. A Team bond occurred

The Team found that additional hands-on knowledge of the process was needed, and appointed a Subgroup to address Order Legibility and Standardization. (Attachment C, page 3.) This illustrates the flexibility of the process and the de-centralization of decision making.

Clarify the Current Process

The Team prepared a current Medication Use Process Flow (Attachment C-1), breaking the process into prescribing and ordering, preparing and dispensing, administration, and monitoring. Details of this process were also documented (Attachments C-2 through C-9.)

Understanding the Variation Causes, Data Accuracy and Reporting

The Team developed cause and effect (fishbone) diagrams by brainstorming possible causes for variation, organized by people, policies and procedures, methods, and equipment (Attachments C-10 through C-13) for each of the four process groups outlined above. (The Team placed priority on the prescribing and ordering phase of the process, since 96.28% of the medication variances reported in 1999 were in this process group.)

Initial qualitative analysis of medication variances (interviews and focus groups) were used to identify which of the possible causes of variation were likely. Problems with the legibility of medication orders was frequently noted . The reports from the Hospital's Pharmacy and Therapeutics (P&T) Committee, however, only noted 19 Legibility concerns for all of 1999. A new validation study looking specifically at legibility performed in November of 2000 found 84 legibility concerns - for the month. (This is a recent example of seeing a lot more detail when you "shine a light" on the issue.) Staff indicated that telephone clarifications had been routinely addressed, however, logging the concern had not been a clear priority.

The Team conducted chart reviews for the 84 cases and found that 90% of originals were legible in the chart, identifying the transmittal process as a significant part of the issue, primarily a result of poor quality of the faxed copy received in the pharmacy. The remainder had illegible originals, mostly due to use of the convenient felt tip marker they carried (for "Sign Your Site") which was, however, hard to read for the medication orders. The PIT Subgroup then "drilled down" to examine the order transmittal process in more detail.

Select the Process For Improvement

Further examination found that faxing the "tissue" copies of the multi-part order form was responsible for many of the legibility issues. Suggestions to fax the original were met with reluctance from Nursing on the Patient Units, due to the amount of time the orders sat in the fax

machine waiting to be "polled"[3] by the Pharmacy fax machine. They did not want to keep the original separated from the patient Chart for long. The Subgroup also found that when pharmacy made rounds, they turned off the polling feature for up to two hours, since they entered orders while on the floors and did not want duplicate orders entered. The registrars on the day shift had already been sending originals rather than tissue copies, since they had fielded most of the order clarification calls and faxed the original to reduce the number of these calls. However, the Nursing staff on the evening and night shift had not realized this and continued to follow procedure.

The Subgroup members identified six actions for initial implementation (see Attachment B.)

Plan and Do the Improvement

A legibility campaign "It Makes a Big Impression" began February 28, 2001 and a pilot was initiated (March 13 - April 13, 2001) on the 6 East unit to replace the Unit and Pharmacy fax machines and implement new procedures (see Attachment B for details.) Also, revision of the medication ordering standards were approved, published, distributed, and was included in the orientation program for new residents held on July 1, 2001.

Check the Results

Results in April, 2001 (Attachment B) showed a decline in illegible orders from 84 in November 2000 to 37 in April 2001. Analysis of these orders found that tissue copies were still being faxed (primarily on weekends), emphasizing the importance of ongoing staff training. Pharmacy reports an improvement in the use of ballpoint pens. Nursing and Pharmacy agree that the number of order clarification phone calls has decreased dramatically.

The most recent update (Attachment C, page 12-13 and C-15) indicates that in May and June 2001, there were 4 illegible orders each month. Improvements have been primarily replacement of the oldest two fax machines, the main Pharmacy machine, and procedural changes on the units. Technical issues with replacing the remaining fax machines should be resolved this month.

Act to Hold the Gain

The 95.2% decline in numbers of illegible orders from November 2000 to May 2001 has held steady for two months. Final roll-out of formal procedures and technology should occur this month (July.)

The Team also sought additional information on how the medication process could be further improved in the longer term. The Institute for Safe Medical Practice (ISMP) conducted a visit to the hospital March 28 - 30, 2001 to conduct an outside review. The formal report is pending, however as expected, they recommend moving to computerized physician order entry (CPOE).

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[3]The system was designed for the Pharmacy fax machine to call (poll) each of the Unit fax machines in turn so that multiple units calling at the same time would not get a busy signal. Polling was used because the fax machines were several years old, and did not have memory.

The Hospital arranged for industry experts to conduct education for the Team and the medical staff on CPOE details. The Hospital is also hiring a consulting firm to assist with selection of a CPOE vendor and determine how to pay for the system.

Informal contacts with other hospitals in the Metropolitan area and one in another state indicated that legibility issues and faxing of tissue copies is a common occurrence. Our forms vendor also indicated that this is a common issue. This suggests that a similar process and results could be easily replicated elsewhere.

V. Future Goals for Continued Improvement

We have listed below several initiatives which we are pursuing either within our own resources if available, through creative negotiations, or grant funding. The locus of control listed is for implementation. Internal projects can be implemented if resources are available and priorities are identified. External projects require some external data collection or decision making.

A. Internal Locus of Control

1. Continued follow-up for interim refinements to our medication system prior to implementing CPOE, including other recommendations from the ISMP study.
2. Implementation of CPOE when financial resources are available and an acceptable vendor has been selected.
3. Performance of a PIT study of Blood Transfusion processes to assess patient safety.
4. Implementation of Payment for Quality demonstrations with one or more payors.

B. External Locus of Control

1. Are there interim payment incentives which can be accessed for small hospitals to cover the expense of obtaining proven but costly safety technology such as CPOE systems?
2. A major concern/counter-force in maintaining a non-punitive atmosphere for incident reporting is the zealous pursuit of "yanking the licenses of poor quality providers," airing "dirty laundry" on the Internet, and periodic media "witch hunts." What can be done to offset these pressures?
3. A major concern/counter-force to complete incident reporting is significant under-reporting currently, placing any "incident rate" measures in significant doubt until such time as most incidents are reported. Can comparisons using only reliable data be defined and encouraged?
4. We have observed "U" shaped curves for both unit costs and quality when compared to volume. A study could explore whether "Balance Points" exist for model specialty programs. Overall bed and staff size should be large enough to achieve economies of scale, yet small enough so that the dis-economies and inflexible decision making of top-heavy organization structures do not arise. On the quality side, can we find a range of "ideal" procedure volume levels which would allow small hospitals to increase safety and quality by specializing as HSS has done?

VI. End Notes

a. Institute of Medicine, *To Err is Human: Building a Safer Health System*. Linda T. Kohn, Janet M. Corrigan, and Molla S. Donaldson, Editors. Washington, D.C.: National Academy Press, 2000.

b. Institute of Medicine, *Crossing the Quality Chasm: A New Health System for the 21st Century*, Committee on Quality of Health Care in America. Washington, D.C.: National Academy Press, 2001.

c. Institute of Medicine, *Envisioning the National Health Care Quality Report.* Hurtado, Margarita P., Swift, Elaine K., and Corrigan, Janet M. eds. Washington, D.C.: National Academy Press, 2001.

d. The New York Patient Occurrence and Tracking System, *Annual Report 1999.* New York State Department of Health, 2001.

e. O'Neill, Paul H., Thompson, Tommy G., Leape, Lucian, Berwick, Donald M., Bagian, james P., Brumstead, John R. *Testimony: Committee on Health, Education, Labor and Pensions. Hearing on Patient Safety: What is the Role of Congress?* United States Senate-Health, Education, Labor and Pensions Committee. May 24, 2001.

f. *Making Health Care Safer:* A Critical Analysis of Patient Safety Practices: Summary. July 2001. AHRQ Publication No. 01-E057. Agency for Healthcare Research and Quality, Rockville, MD. http://www.ahrq.gov/clinic/ptsafety/summary.htm

g. Berwick, Donald., Godfrey, A. Blanton, and Roessner, Jane. *Curing Health Care: New Strategies for Quality Improvement*. California. Jossey-Bass Inc., 1990.

h. Shaw, John D., *"When a Quality Measure Doesn't Measure Quality: A Case Study."* White Paper, Next Wave, Inc., Albany, NY, 1999.

i. Shaw, John D., *"How Will We Know?: Assessing Incident and Quality Indicator Benchmarks and Trends In a Time of Variable Reporting Rates."* White Paper, Next Wave, Inc., Albany, NY, 2001.

j. The evolution of crew resource management training in commercial aviation. Available at: http://www.psy.utexas.edu/psy/helmreich/Evolution_IJAP_for_Dist.htm, 2001.

k. Urban M.K., Markowitz, S.M., Gordon, M.A., Urquhart, B.L., and Kligfield, P. Postoperative prophylactic administration of beta-adrenergic blockers in patients at risk for myocardial ischemia. *Anesthesia Analgesia,* 90(6):1257-61, 2000.

Attachments

A. Overview and Forms - the FOCUS-PDCA Continuous Quality Improvement (CQI) Process at the Hospital for Special Surgery

B. "Storyboard" Summary of the Clinical Patient Safety: Medication Use Project (as of April, 2001)

C. Progress Report: Clinical Patient Safety: Medication Errors - Process Improvement Team (as of July 18, 2001)

Attachment A

MODEL FOR PERFORMANCE IMPROVEMENT

F FIND a process to improve

O ORGANIZE to improve the process

C CLARIFY current knowledge of the process

U UNDERSTAND sources of process variation

S SELECT the process improvement

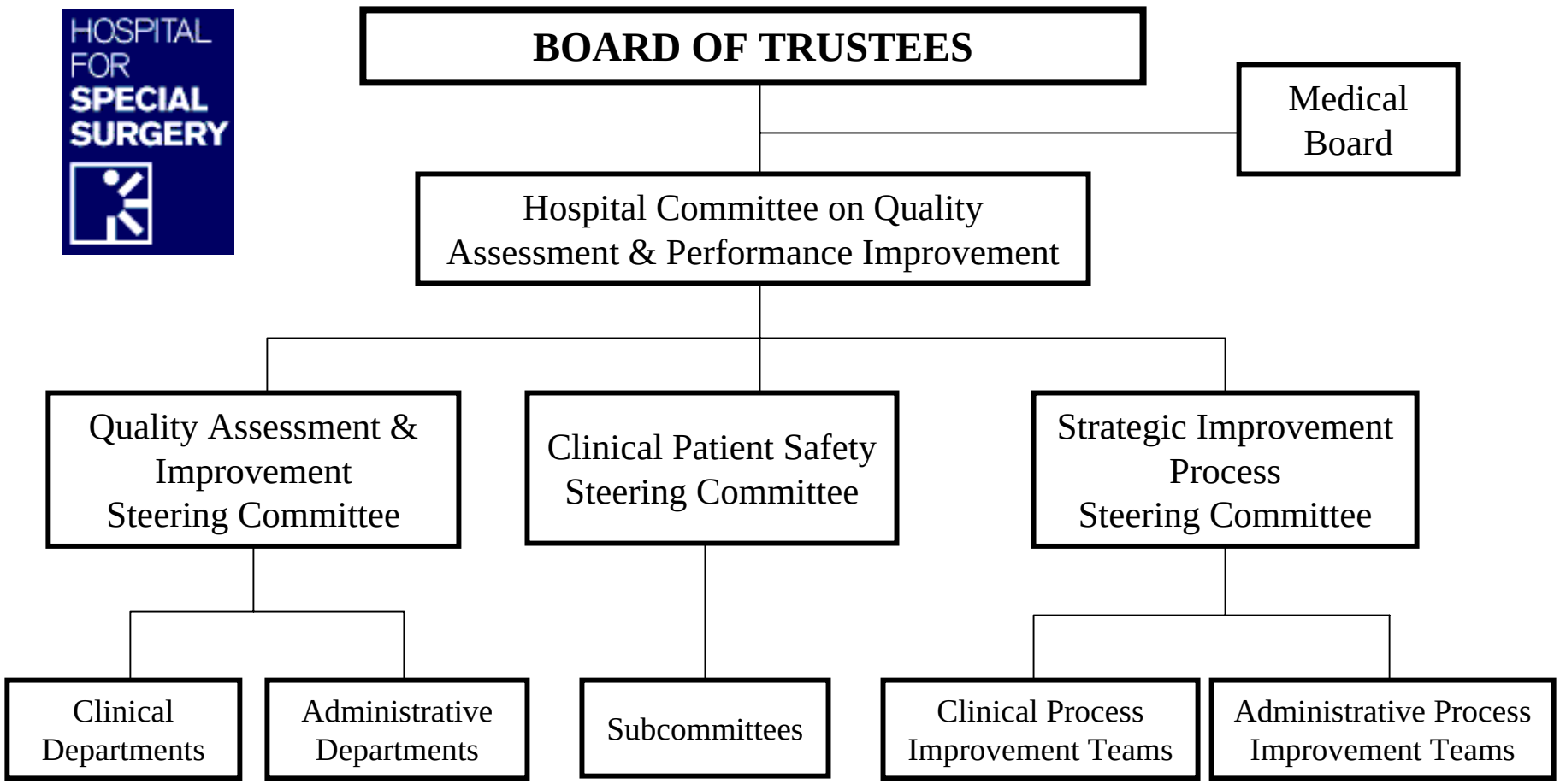
P PLAN the improvement & the data collection

D DO the improvement

C CHECK the results

A ACT to hold the gain & continue improvement

TABLE OF ORGANIZATION FOR QUALITY ASSESSMENT AND PERFORMANCE IMPROVEMENT



THE HOSPITAL FOR SPECIAL SURGERY

Strategic Improvement Program

Performance Improvement Prioritization Criteria

Approval Date:__/__/__

I. Performance Improvement Team

A. **Team Project:**_____

B. **Evaluation Issue/Process:**_____

_____

II. Prerequisites for Team Implementation

A. **Measurement Defined :** Yes ☐ No ☐

Measure: _____

_____

B. **Resources Available:** Yes ☐ No ☐

Resources:_____

_____

III. Priority Ranking

Assign points to each criteria met:		**Scoring**	
		TEAM LEADER	SIP COMMITTEE
Potential for Improved Patient Outcomes	7 points		
Patient Satisfaction/Patient Safety	6 points		
High Risk/ High Volume/Problem Prone	5 points		
Legal/Regulatory Issues	4 points		
Employee Satisfaction	3 points		
Cost Savings	2 points		
Address Important Functions/Mission, Vision & Values	1 point		
Total Score			

IV. Functions: (check all that apply)

- ☐ Leadership
- ☐ Patient Rights & Organizational Ethics
- ☐ Improving Organizational Performance
- ☐ Environment of Care
- ☐ Human Resources
- ☐ Governance & Management
- ☐ Medical Staff
- ☐ Assessment of Patients
- ☐ Care & Treatment of Patients
- ☐ Education
- ☐ Continuum of Care
- ☐ Management of Information
- ☐ Surveillance, Prevention and Control of Infection

V. Dimensions of Performance: (check all that apply)

☐	Appropriateness	☐	Efficacy
☐	Availability	☐	Efficiency
☐	Competency	☐	Respect and Caring
☐	Continuity	☐	Safety
☐	Effectiveness	☐	Timeliness

VI. Team Leader:

Name: _____

CQI class attended: ☐ Yes Date: _/_/_

VII. Team Members:

List Names:

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

Setting Priorities For Improvement

Criteria

- Most likely to improve patient outcome/satisfaction/ensure safety
- Opportunity is important to mission, vision, values and priorities
- Improve employee satisfaction
- Opportunity addresses important functions
- High risk, high volume, problem prone
- Opportunity addresses legal or regulatory issue
- Opportunity originates from consideration of measurement factors
- High cost function or cost savings

Attachment B

HOSPITAL FOR SPECIAL SURGERY

STRATEGIC IMPROVEMENT PROCESS
CLINICAL PATIENT SAFETY: MEDICATION USE PROCESS IMPROVEMENT
Including Subgroup Project: Medication Order Legibility & Standardization

Find a Process to Improve

Team Mission
Improve the safety of the medication use process

Organize a Team that Knows the Process

Team Members

- Karen Cohen RN, Information Technology, *Team Leader*
- Lisa Goldstein, Administration, *Facilitator*
- Richard Benigno RPh, Information Technology
- John Cox, Information Technology
- Susan Flics RN, Patient Care & Quality Mgmt.
- Marion Hare, Administration
- Jacqueline Kostic RN, Nursing
- Mary McDermott RN, Nursing
- Joanne Melia, Risk Management
- Deirdre O'Flaherty RN, Nursing
- Tina Yip RPh, Pharmacy
- Richard Laskin MD, Surgery *(physician consultant)*
- Steven Magid MD, Medicine *(physician consultant)*

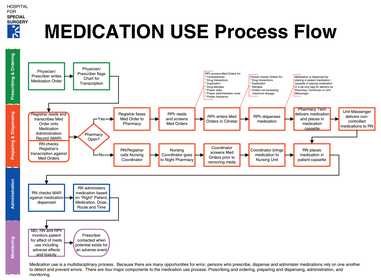
Order Legibility & Standardization Subgroup Members

- Karen Cohen RN, Information Technology, *Team Leader*
- Richard Benigno RPh, Information Technology
- Manuel Co RN, Nursing
- Marion Hare, Administration
- Vanessa Jeffrey RPh, Pharmacy
- Mary McDermott RN, Nursing
- John Misso, Biomedical Engineering
- Patricia Quinlan RN, Nursing
- Connie Yang, Information Technology
- Tina Yip RPh, Pharmacy

Project Start Date

July 2000

Clarify the Current Process

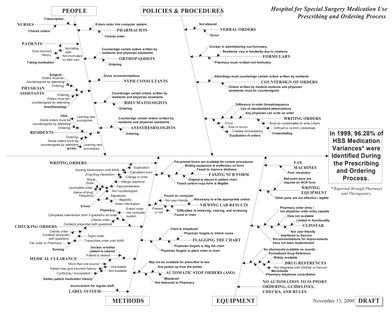


Understand the Causes of Variation

The team developed cause-and-effect diagrams for all components of the medication use process:

- Prescribing and ordering
- Preparing and dispensing
- Administration
- Monitoring

Initial analysis of medication variance data noted problems with the legibility of medication orders. The Order Legibility and Standardization sub-group began work on this issue in November 2000



Select the Process Improvement

- In 1999, 96.28% of the medication variances reported to the Hospital's Pharmacy and Therapeutics Committee occurred during the prescribing and ordering phase of the medication process
- A review of medication orders for November 2000 found more than 80 orders that were illegible on arrival at the pharmacy
- A retrospective chart review found that 90% of the original orders were in fact legible; illegibility in the pharmacy was primarily a result of the poor quality of the faxed copy received at the pharmacy

The subgroup members identified six actions:

- Upgrading of fax machines
- Revising policy on faxing original orders
- Changing the procedure for sending medication orders to Pharmacy
- Reinforcing use of ballpoint pens and ID codes
- Reinforcing importance of legible handwriting
- Improving standardization of ordering nomenclature

Plan & Do

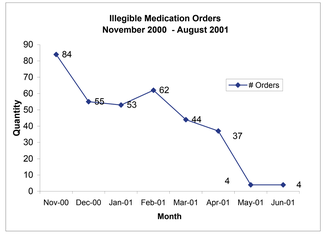
- 6E Fax Order Pilot: March 13 – April 13, 2001.
  - -Replaced fax machine on 6E
  - -Added a dedicated fax in the Pharmacy
  - -Stopped using "polling" feature
  - -Revised policy: began faxing original orders, not tissue copies, using the "scan" feature
  - -Pharmacy no longer enters orders on units, only in PACU
  - -Trained staff on policy and procedure changes
  - -Nursing and Pharmacy to track illegible orders
- "It Makes a Big Impression" Campaign
  - -Hospital-wide initiative began February 28

  Reinforced:
  - - uses of ball point pens
  - - need for clear signatures
  - - use of ID codes

  - Importance of legibility communicated by placing signs on all nursing units, announcements at Medical Staff conference and nursing staff meetings, articles in *Echo* and in *Bits and Bytes @ Bones*, and by showing the film *Beyond Blame*
- Revision of medication ordering standards.
  - -Approved by the P&T Committee and Medical Board
  - -Published and distributed
  - -Included in new resident and fellow orientation programs

Check

The number of illegible orders has declined:



Other findings from pilot:

- Initially, tissue copies were still being faxed (primarily an issue on weekends)
  - -Emphasizes importance of ongoing staff training
- Pharmacy reports improvement in the use of ballpoint pens
- Nursing and Pharmacy agree that the number of order clarification phone calls has

Act

- Plan house-wide rollout of the changes as soon as possible. Include in the plan for the roll-out:
  - - Formal revision of the order transmission to pharmacy policy
  - - Required training on new procedure for all involved staff, including weekend staff
- Conduct chart study to determine whether there has been improvement in the use of ballpoint pens
- Develop MD and RN legibility and standards education program. Offer this program during orientation of new residents in July and at an upcoming medical staff conference
- Differentiate illegible orders resulting from poor handwriting and develop plan to handle this issue

Additional Actions on the Medication Use Process

- The team sought additional information on how the medication use process could be improved. The institute for Safe Medical Practice (ISMP) visited the hospital March 28-30, 2001. Formal ISMP report is pending
- The team has recommended the hospital move to computerized physician order entry (CPOE)
  - - Industry experts conducted educational sessions for the team and for the hospital's medical staff. These included descriptions of CPOE functionality, system demonstrations and discussions of the CPOE system market
  - - The hiring of a consulting firm to assist with the selection of a CPOE vendor is in process

Attachment C

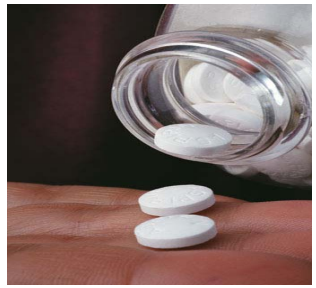
Hospital for Special Surgery
Strategic Improvement Process

Clinical Patient Safety
Medication Errors
Process Improvement Team

Progress Report

July 18, 2001

Find a Process to Improve



The 2000 Institute of Medicine report, “To Err is Human: Building a Safer Health System,” renewed HSS’s ongoing commitment to improving clinical patient safety. The report identified medication errors as among the most costly and preventable threat to patient safety. The report also highlighted the universal problem of inaccurate medication error reporting systems in hospitals.

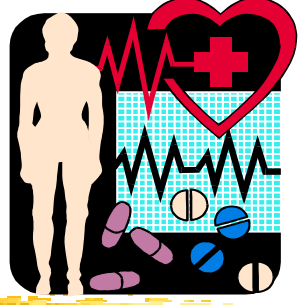
In response, the following processes have been targeted for improvement:

- Medication Use Process
- Medication Variance Reporting Process

Organize a team that knows the process

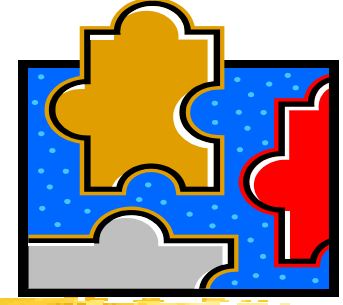
Leader: Karen Cohen, R.N.	**Director of Clinical Applications & Planning, Information Technology**
Facilitator: Lisa Goldstein	**Executive VP and COO, Administration**
Members	
Richard Benigno, RPh.	**Manager, Clinical Applications, Information Technology**
John Cox	**Assistant VP and CIO, Information Technology**
Susan Flics, R.N.	**Assistant VP, Patient Care and Quality Management**
Marion Hare, R.N.	**Vice President, Administration**
Jackie Kostic, R.N.	**Vice President, Nursing**
Marcia Levenson, R.N.	**Assistant Director, Patient Care and Quality Management**
Mary McDermott, R. N.	**Nurse Manager, Nursing**
Joanne Melia	**Director, Risk Management**
Deirdre O'Flagherty, R. N.	**Assistant VP, Inpatient & Ambulatory Services, Nursing**
Tina Yip, RPh.	**Director of Pharmacy Services, Pharmacy**
MD Consultants	
Richard Laskin, M.D.	**Department of Orthopedic Surgery**
Steven Magid, M.D.	**Department of Medicine**
PIT Sub-Group	
Richard Benigno, RPh	**Manager, Clinical Applications, Information Technology**
Manuel Co, R.N.	**Clinical Informatics Systems Manager, Nursing**
Karen Cohen, R.N.	**Director of Clinical Applications & Planning, Information Technology**
Mary Hargett	**Manager, Department of Anesthesia**
Vanessa Jeffrey	**Clinical Coordinator, Pharmacy**
Mary McDermott, R.N.	**Nurse Manager, Nursing**
Patricia Quinlan, R.N.	**Performance Improvement Coordinator, Nursing**
Connie Yang	**Application Analyst, Information Technology**
Tina Yip, RPh	**Director of Pharmacy Services, Pharmacy**

Clarify current knowledge of process



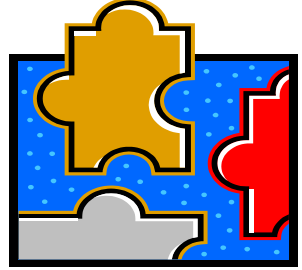
- Review the medication use processes (see flow chart Attachments 1-5), including
  - Prescribing and Ordering
  - Preparing and Dispensing
  - Administration
  - Monitoring
- Review the Nursing, Pharmacy and Anesthesia processes for reporting Medication Variance (see flow chart Attachments 6-9).
- Review HSS's working definitions of "Medication Variance, Medication Error and Adverse Drug Event."
- Participate in various educational sessions to learn about new technological solutions and how our current clinical systems can be optimized to improve patient safety.

Understand the sources for process variation



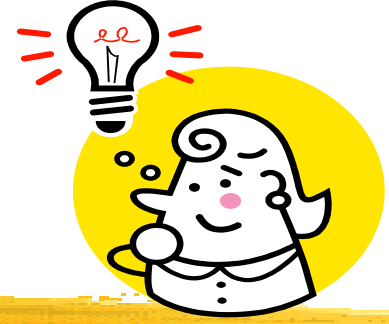
- The team is analyzing the medication use process, including the conditions and variables occurring from the point the physician order is written until post-administration monitoring to determine areas of vulnerability (high risk for errors) requiring improvement (see fishbone diagram Attachments 6-13).
- The team is studying the various processes utilized for medication variance reporting. Initially, it is clear that each reporting department has its own definitions, method and documentation tools for identifying and tracking variance data. Hospital-wide statistics currently include pharmacy and nursing data.

Understand the sources for process variation, cont'd.



- Much of the medication use process is manual and that which is automated does not have the decision-support capabilities necessary to help prevent errors.
- Next steps:
  - Finalize drafts of fishbone and flow chart diagrams
  - Develop HSS definitions for medication variance, medication error and adverse drug event
  - Evaluate the use of outside consultants for validation and confirmation
  - Develop list of short term and long term process and technology recommendations
  - Continue to offer educational opportunities to learn about automated tools and systems to assist with these processes

Select the process improvement



A. Long Term --Technology

⌘ *Select and Implement a* ***Clinical Information System (CIS) to enable Computerized Physician Order Entry (CPOE)***

B. Short Term -- Low Hanging Apples

⌘*The available data, including the fishbone analysis and Medication Variance Statistics point toward improving the processes associated with the legibility of orders.*

Variance	*1999 Total*	*2000 Qtr 1*	*2000 Qtr 2*	*2000 Qtr 3*	*2000 Qtr 4*	*2000 Total*
Illegible Orders	19	8	8	1	139	156

P*lan the improvement and data collection*

- A work plan was developed to identify all of the tasks associated with this PI project. (See Attachment 14)
- Additional Studies were conducted to better understand how to improve the process:
  - Nov: 84 illegible faxed orders
  - Dec: 55 illegible faxed orders
  - A retrospective chart review identified 90% of original orders to be legible.
  - Nursing collected statistics (3-day study) to determine the scope of the problem from the nursing perspective.
    - Documented a handful of illegible orders (low census week).
  - Focus Group, discussions and walk-throughs with Pharmacy, Nursing and Registrars to understand the current process and procedures.
- ISMP completed a thorough evaluation of the HSS Medication Use Process on 3/30/01. Formal recommendations received in June, 2001 to follow.

P*lan the improvement and data collection,cont'd.*

Data Collection Conclusions

- Although poor handwriting exists, the majority of illegible orders resulted from poor quality of faxed tissue copies.
- The current procedures were "customized" by each unit and often not followed by the registrars.
- Inconsistent reporting of this variance.

Do *the improvement*

- **"It makes a Big Impression Campaign"- 2/28/01**
  - Ball point pens
  - Clear signature
  - Use ID codes
  - Communicate importance of legibility: Medical Staff Conference, Echo, Bits and Bytes@ Bones
- **6E Fax Order Pilot - 3/13/01- 4/13/01**
  - Replace fax machine on 6E and add dedicated fax in Pharmacy (use "scan" not "polling" feature)
  - Revise procedures to include faxing original orders
  - Train staff re new procedure
  - Nursing and Pharmacy track illegible orders
  - Revise fax order policy
  - Check results and revise procedure before house-wide roll-out

Do *the improvement, cont'd.*

- **Improve illegible orders variance reporting**
  - Revise procedure in pharmacy for tracking of illegible orders
  - Develop procedure for periodic tracking of illegible orders in nursing
  - Monitor use of MD ID codes and ball point pens
- **Revise procedure for distributing MD ID codes**
- **Evaluate Use of Pyxis connect**
  - Vendor unwilling to pilot software at HSS
- **Improve standardization of ordering nomenclature**
  - Develop and approve policy to include best practice standards
- **Develop MD and RN Legibility and Standards Education Program**
  - July Orientation
  - Medical Staff Conference

Check the results

Preliminary thoughts

- Improvements have been made on the tracking of illegible orders (See Attachment 15).
  - February: 62
  - March: 44
  - April : 37
  - May: 4
  - June: 4
- The number of illegible orders has declined dramatically.
- Tissue copies are still being faxed. On 6E, 11of the illegible orders reported in April resulted from continuing the practice of faxing the tissue copy. Additional training was conducted to improve the utilization of the new procedure (primarily weekend staff).
- Pharmacy reports an improvement in orders written with a ball point pen, although a chart study is needed to determine actual improvement.
- Technical issues concerning the use of fax machines have been identified and will need to be resolved before the house-wide roll-out.
- Formal revision of the order transmission to pharmacy policy needs to occur simultaneously with house-wide roll-out (ASAP).

Act to hold the gain and continue improvement

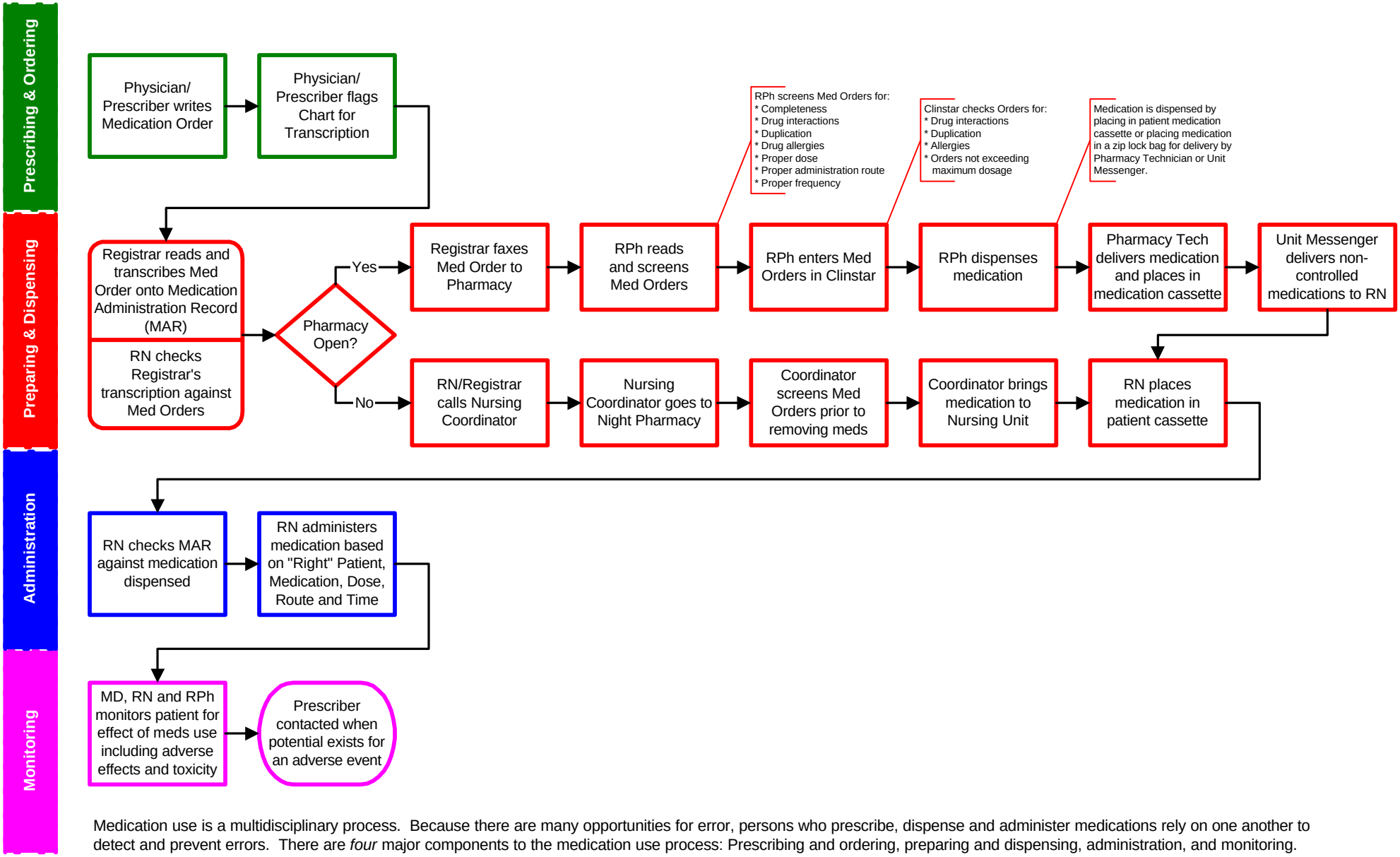
- 95.2% decline in the number of illegible orders received in the pharmacy from Nov., 2000 until June, 2000. Several process improvements were implemented during this time period.
- Statistics remain low for 2 consecutive months.
- Illegible orders now being analyzed to identify “repeat offenders.”
- Process changes implemented on all inpatient units while new fax machines are phased in.
- ISMP evaluation includes many areas for future improvement.

Attachments

HOSPITAL FOR **SPECIAL SURGERY**

Attachment 1

MEDICATION USE Process Flow



Medication use is a multidisciplinary process. Because there are many opportunities for error, persons who prescribe, dispense and administer medications rely on one another to detect and prevent errors. There are *four* major components to the medication use process: Prescribing and ordering, preparing and dispensing, administration, and monitoring.

MCo/MedicationUseFlow2000.vsd

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Attachment 2

MEDICATION USE Process Flow

Prescribing & Ordering

Physician/ Prescriber writes Medication Order → **Physician/ Prescriber flags Chart for Transcription**

- Each medical chart has a color-coded wheel and physician flags the chart "red" for pick up after a medication order is written

- Orders in PACU may be left at the bedside and not in the chart
- Prescriber need to verbally convey to RN or unit regisrar that a medication order has been written
- Prescriber forgets to flag chart or may have turn on the incorrect flag or does not know the flagging procedure

Preparing & Dispensing

- *Micromedex* available in patient care areas where medications are ordered
- *HSS Formulary, AHFS Reference Book* available on patient care unit
- 7/2000 Residents/Fellows will be issued *Tarascon Pocket Pharmacopoeia 2000*
- Preprinted order forms in use to guide prescribing of routine medications for: Hip/knee arthroplasty post-op orders, spine post-op orders, adulty and pediatric PCA post-op orders, pediatric chemotherapy orders (almost completed)
- PCA ordered by Pediatric Resident is countersigned by Fellow/Attending
- RPh screens medication orders and contacts Prescriber when clarification or intervention is required and documents on intervention form
- Verbal orders are not accepted and prescribers fax medication orders to patient care unit
- *Automatic Stop Orders* (ASO) are generated for prescriber for review, renew and discontinuation of medications
- Feedback mechanism for reported errors and hazardous situations are provided through drug newsletter, medical staff conference, P&T Committee and Pharmacy/Nursing Committee

Administration

- Information about patient's comorbid and/or chronic conditions (hypertension, diabetes, renal or hepatic impairment, pregnancy...) is obtained by various healthcare professionals and may not be consistent
- Drug history including prescriptions, over the counter medications, vitamins, herbal products and illicit drugs may be incomplete, and Patient Database may be incomplete or inaccurate
- Patient Database may not be in the medical chart for patients not medically cleared at HSS
- Attending medical clearance may be incomplete
- Patient allergy information is not consistent throughout medical chart
- Prescriber cannot easily access inpatient and/or outpatient laboratory values when writing medication orders
- Prescriber does not routinely adjust doses of medications that may be toxic in patients with renal impairment
- ASO generated on printer of each nursing unit may not have been placed in front of the medical chart
- ASO are not picked up and/or sent to Pharmacy
- Duplicate orders written by different or multiple services
- Prescribers do not directly enter drug orders into a computer system and are therefore not warned about unsafe orders (i.e. Allergies, interactions and maximum doses)
- Prescriber using a felt tip pen to write orders or not pressing hard when writing orders makes orders difficult to read
- Label system is cumbersome to use for regular staff
- Changes in medication ordering are not consistently rewritten and have incidences involving changes written over original medication order
- Patient's height and weight information are not consistently indicated as part of the medication orders

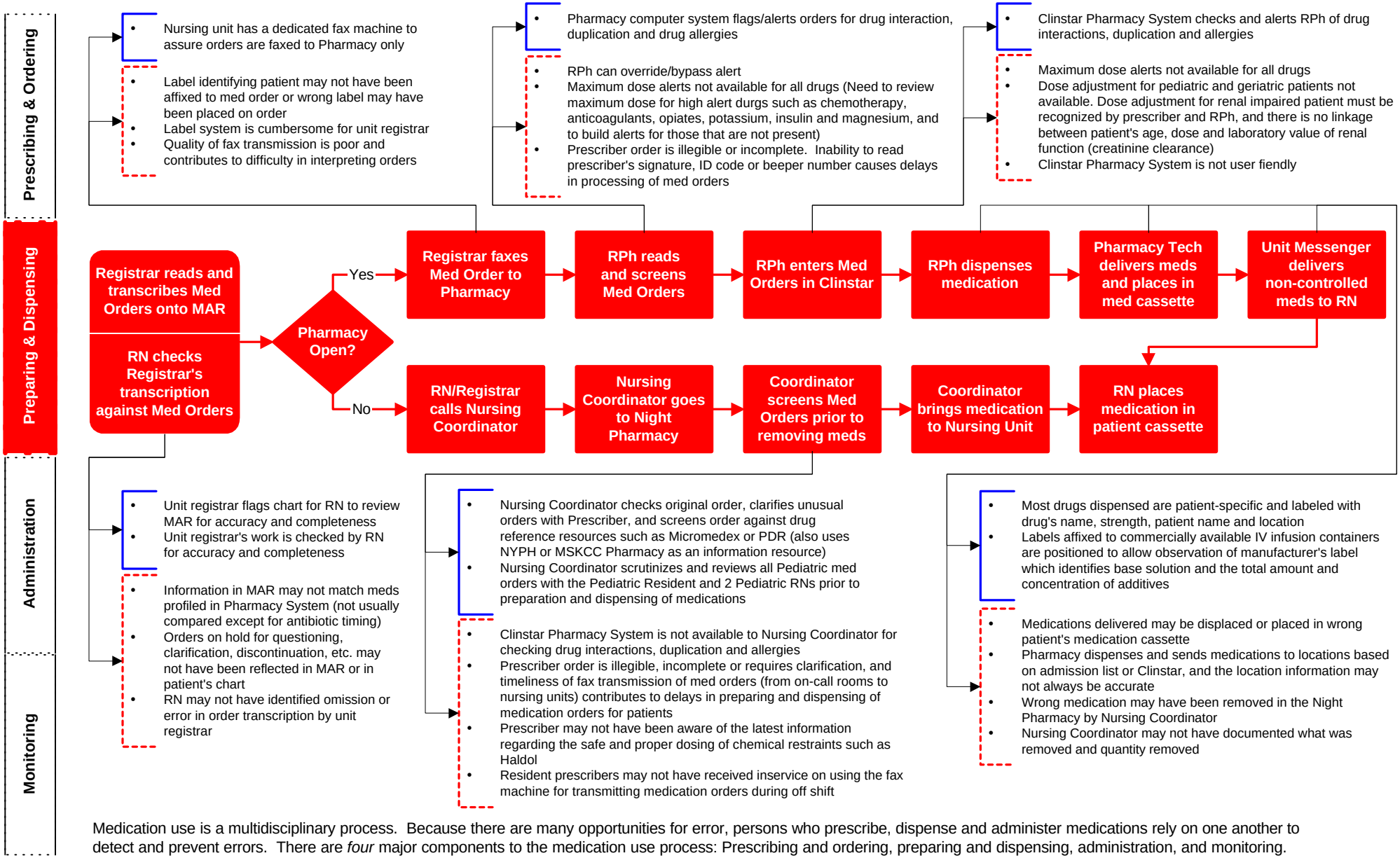
Monitoring

Medication use is a multidisciplinary process. Because there are many opportunities for error, persons who prescribe, dispense and administer medications rely on one another to detect and prevent errors. There are *four* major components to the medication use process: Prescribing and ordering, preparing and dispensing, administration, and monitoring.

HOSPITAL FOR **SPECIAL SURGERY**

Attachment 3

MEDICATION USE Process Flow



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MCo/MedicationUseFlow2000.vsd

HOSPITAL FOR **SPECIAL SURGERY**

Attachment 4

MEDICATION USE Process Flow

Prescribing & Ordering

- RN checks original order and initials MAR before first dose of medication is administered
- RN checks MAR against medication that has been dispensed
- PYXIS guides RN to location of medication selected
- Heparing and insulin orders are checked by 2 RNs
- Starting 7/2000, each medication cart will contain "Handbook of Commonly Prescribed Drugs" as a reference for RNs

Preparing & Dispensing

- Illegible handwriting contributes to order being misread or timing of antibiotic incorrectly scheduled
- An incorrect dose or omission may not have been identified by an RN
- RN charts the administration of a medication dose on the MAR only to find out that the medication is not in paitient's bin. A missing medication request form is completed and by the time the medication is sent, either dose is forgotten or it may have been time for the next dose
- PYXIS does not provide maximum dose information

Administration

RN checks MAR against medication dispensed

RN administers medication based on "Right" Patient, Medication, Dose, Route and Time

- Unit dose and cassette system provide safety
- RN pours medications one patient at a time
- RN checks patient bracelet to ensure that it matches name on MAR
- MAR drug allergies are listed for cross referencing with meds being administered
- PYXIS reports are timed and RNs can validate that a medication was administered (i.e. pain medications)
- RPh or technician conducts monthly inspection of designated drug storage areas on nursing units to assure that no unapproved medications are stocked, that minimal quantities of approved medications are stocked, and that all stocked medications are not expired

- Medication allergy not documented completely
- Multiple interruptions and distractions can lead to unsafe administration
- Medications missing from patient cassette
- Order is not clarified
- Labels used on patient's identification bracelet washes off when in contact with fluids
- Pre-mix medications ordered during off shift requires RNs (who do not perform this task on a regular basis) to mix medications before administration and would require resource support from Nursing Coordinator to ensure safe preparation and administration
- Discontinued patient medications are not removed from patient bin in a timely manner to prevent administration of discontinued drug
- Discontinued medications are removed from patient bin and stashed away
- Medication may be borrowed from one patient for another and can result in medication being administered to patient that it is not intended for
- First doses of high alert medication (i.e. Warfarin) is removed from floorstock in PYXIS before being reviewed by an RPh for patient specific order and screened for order safety
- Barcoding is not used to verify patient identity during drug administration

Monitoring

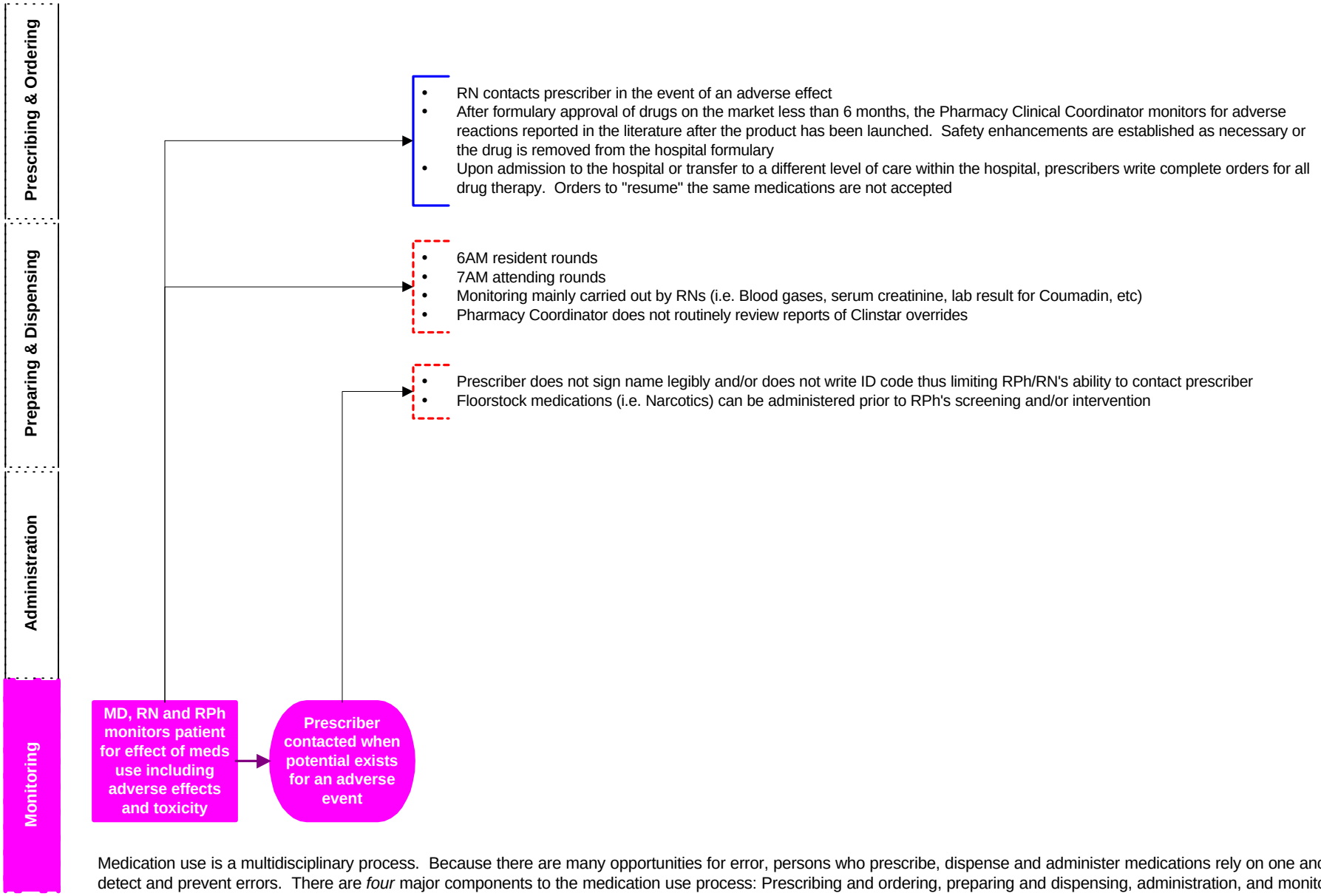
Medication use is a multidisciplinary process. Because there are many opportunities for error, persons who prescribe, dispense and administer medications rely on one another to detect and prevent errors. There are *four* major components to the medication use process: Prescribing and ordering, preparing and dispensing, administration, and monitoring.

MCo/MedicationUseFlow2000.vsd

HOSPITAL FOR **SPECIAL SURGERY**

Attachment 5

MEDICATION USE Process Flow



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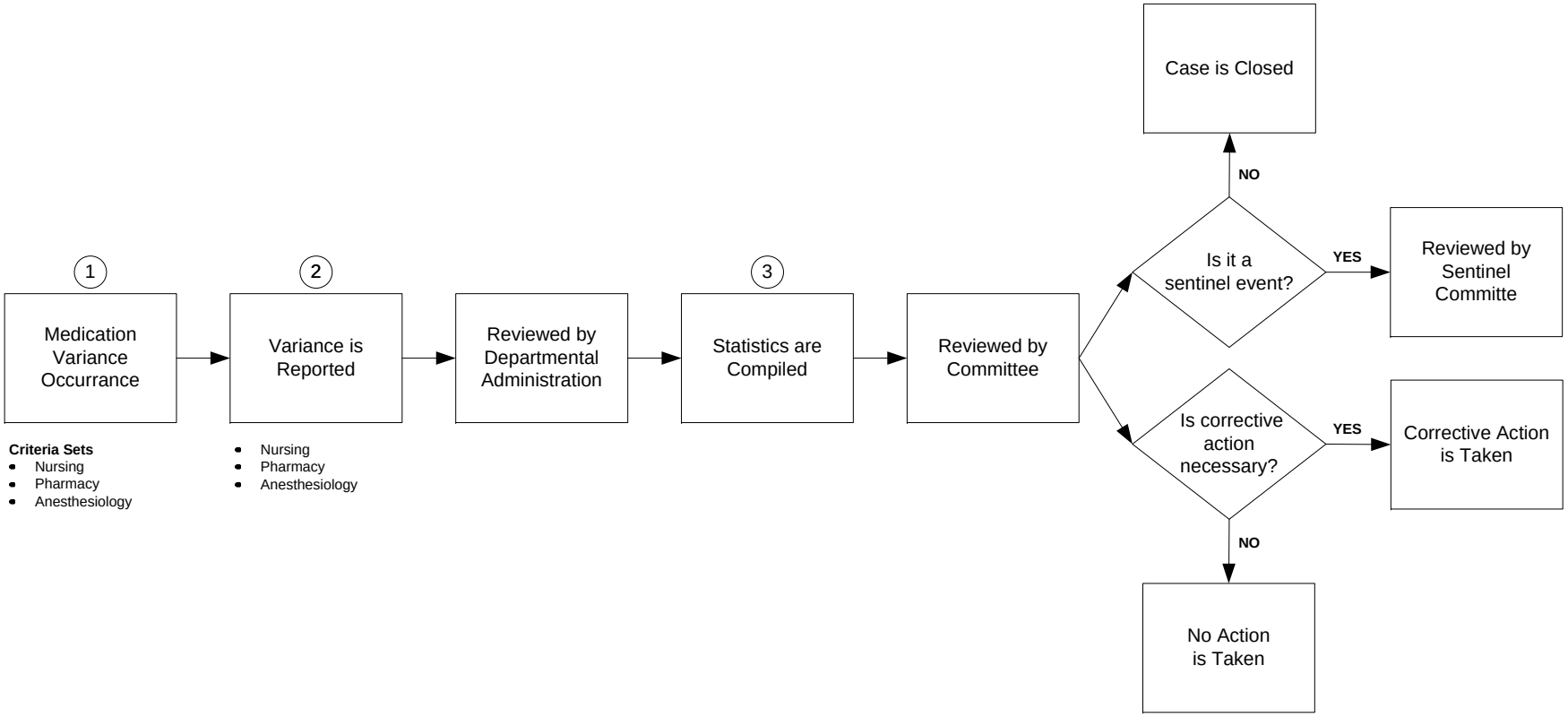
Hospital for Special Surgery Medication Variance Reporting and Review Process

Attachment 6



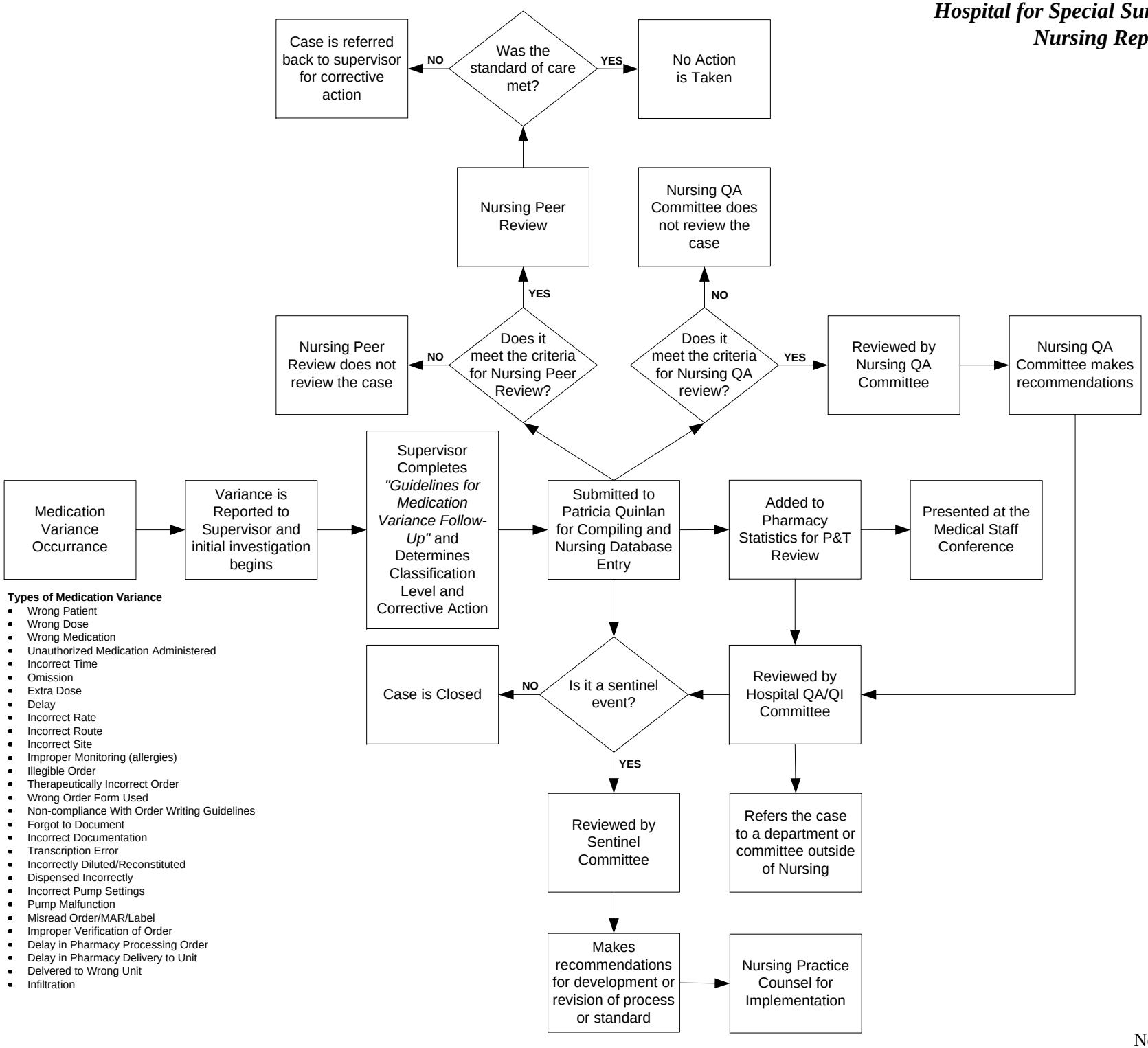
1. What is a medication variance?

2. How does each department report to their medication variances?
   - Communication
   - Documentation

3. How are variances compiled?

November 10, 2000 **DRAFT**

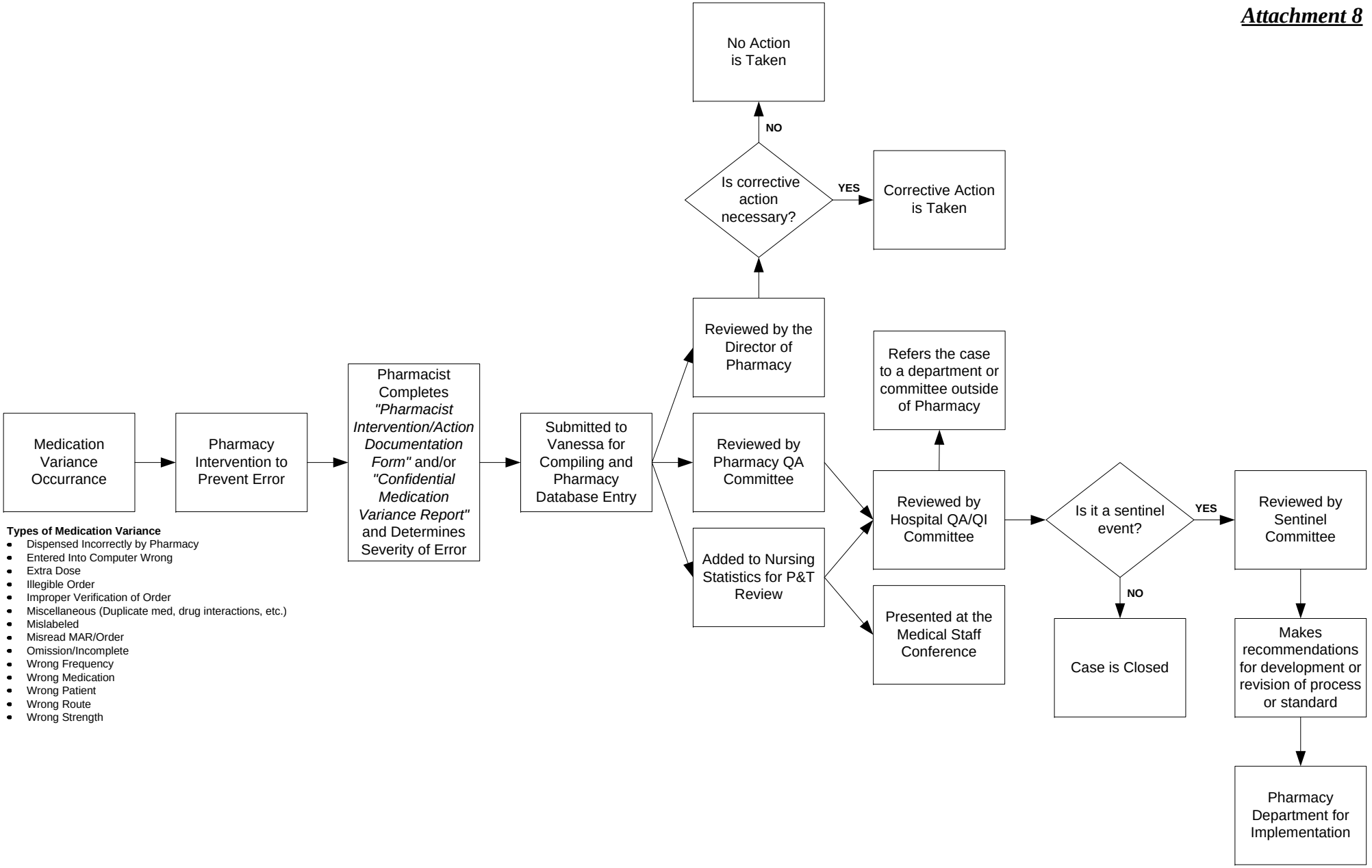
Attachment 7



Types of Medication Variance

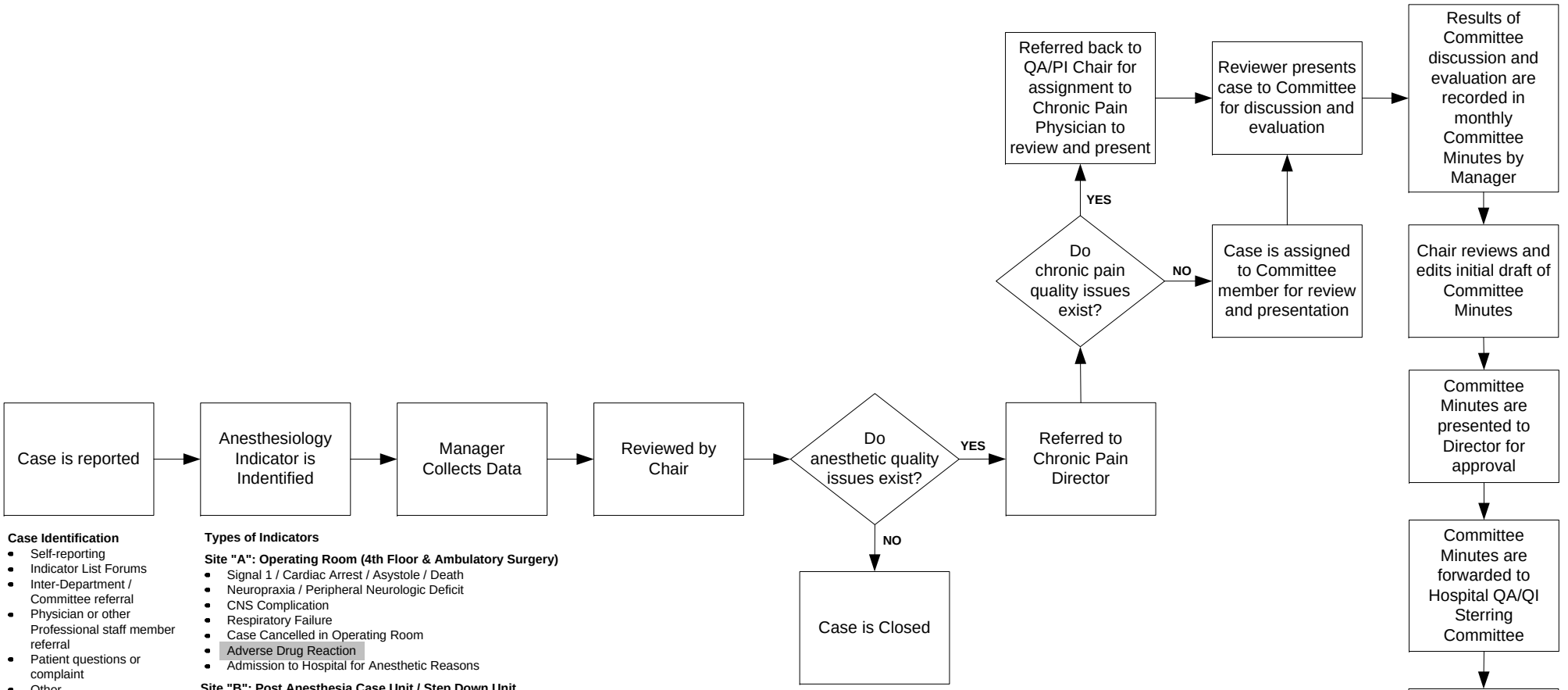
- Wrong Patient
- Wrong Dose
- Wrong Medication
- Unauthorized Medication Administered
- Incorrect Time
- Omission
- Extra Dose
- Delay
- Incorrect Rate
- Incorrect Route
- Incorrect Site
- Improper Monitoring (allergies)
- Illegible Order
- Therapeutically Incorrect Order
- Wrong Order Form Used
- Non-compliance With Order Writing Guidelines
- Forgot to Document
- Incorrect Documentation
- Transcription Error
- Incorrectly Diluted/Reconstituted
- Dispensed Incorrectly
- Incorrect Pump Settings
- Pump Malfunction
- Misread Order/MAR/Label
- Improper Verification of Order
- Delay in Pharmacy Processing Order
- Delay in Pharmacy Delivery to Unit
- Delvered to Wrong Unit
- Infiltration

Attachment 8



Hospital for Special Surgery Medication Variance
Anesthesiology Reporting and Review Process

Attachment 9



Case Identification

- Self-reporting
- Indicator List Forums
- Inter-Department / Committee referral
- Physician or other Professional staff member referral
- Patient questions or complaint
- Other

Types of Indicators

Site "A": Operating Room (4th Floor & Ambulatory Surgery)

- Signal 1 / Cardiac Arrest / Asystole / Death
- Neuropraxia / Peripheral Neurologic Deficit
- CNS Complication
- Respiratory Failure
- Case Cancelled in Operating Room
- Adverse Drug Reaction
- Admission to Hospital for Anesthetic Reasons

Site "B": Post Anesthesia Case Unit / Step Down Unit

- Signal 1 / Cardiac Arrest / Asystole / Death
- Perioperative Acute Myocardial Infarction
- CNS Complication
- Respiratory Failure
- Transfer Back to PACU / SDU within 24 hours
- Unplanned Transfer to NYPH
- Renal Failure
- Adverse Drug Reaction

Site "C": Acute Pain Service

- Peripheral Neurologic Deficit
- Respiratory Depression / Over-sedation
- Pump Malfunction / Pump programming Error
- Epidural Abscess / Infection

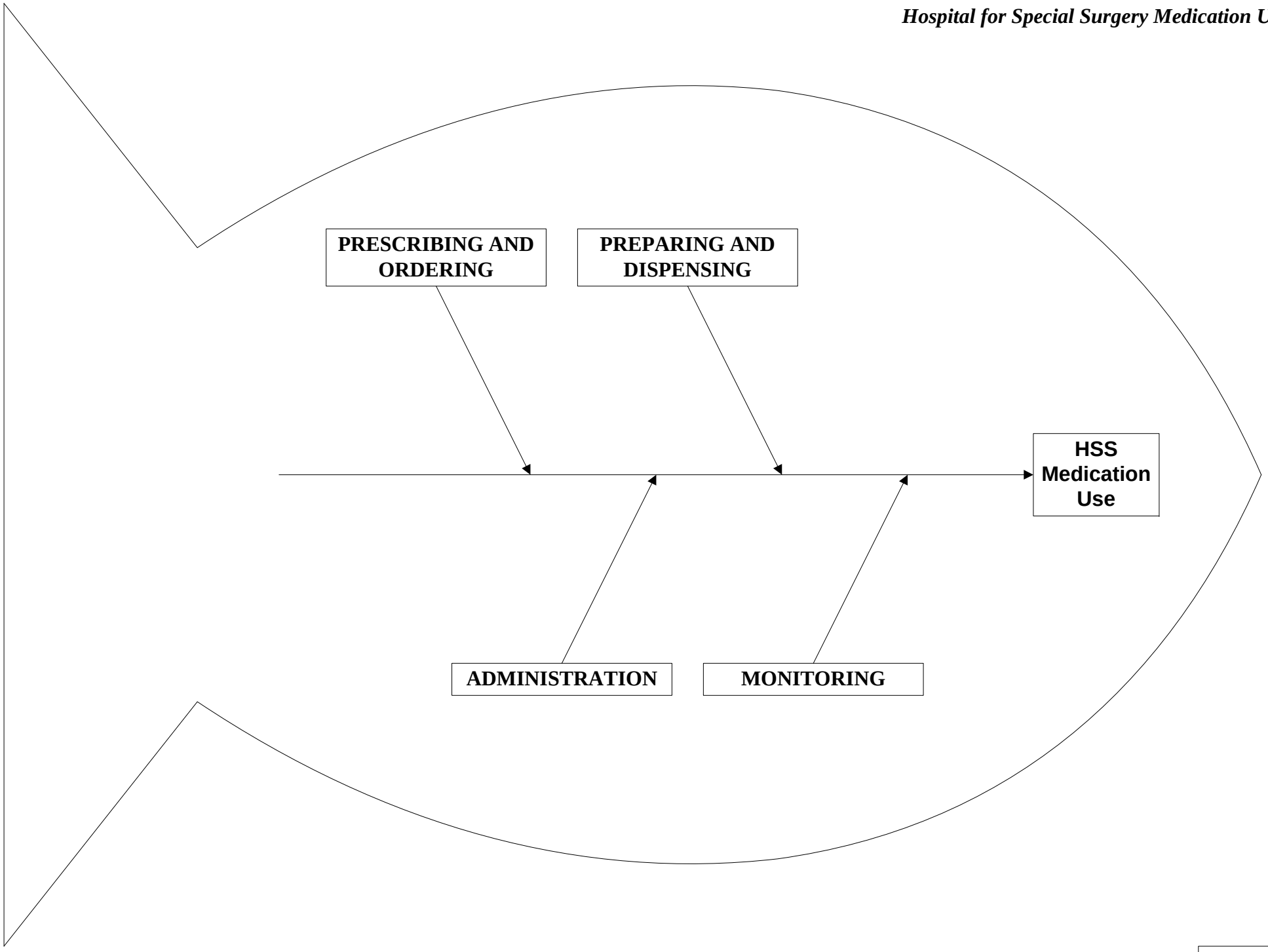
Site "D": Chronic Pain Service

- Signal 1 / Cardiac Arrest / Asystole / Death
- Peripheral Neurologic Deficit
- CNS Complication
- Epidural Abscess / Infection
- Pneumothorax
- Unexpected Admission to the Hospital within 48 hours

Site "E": In-Patient Unit

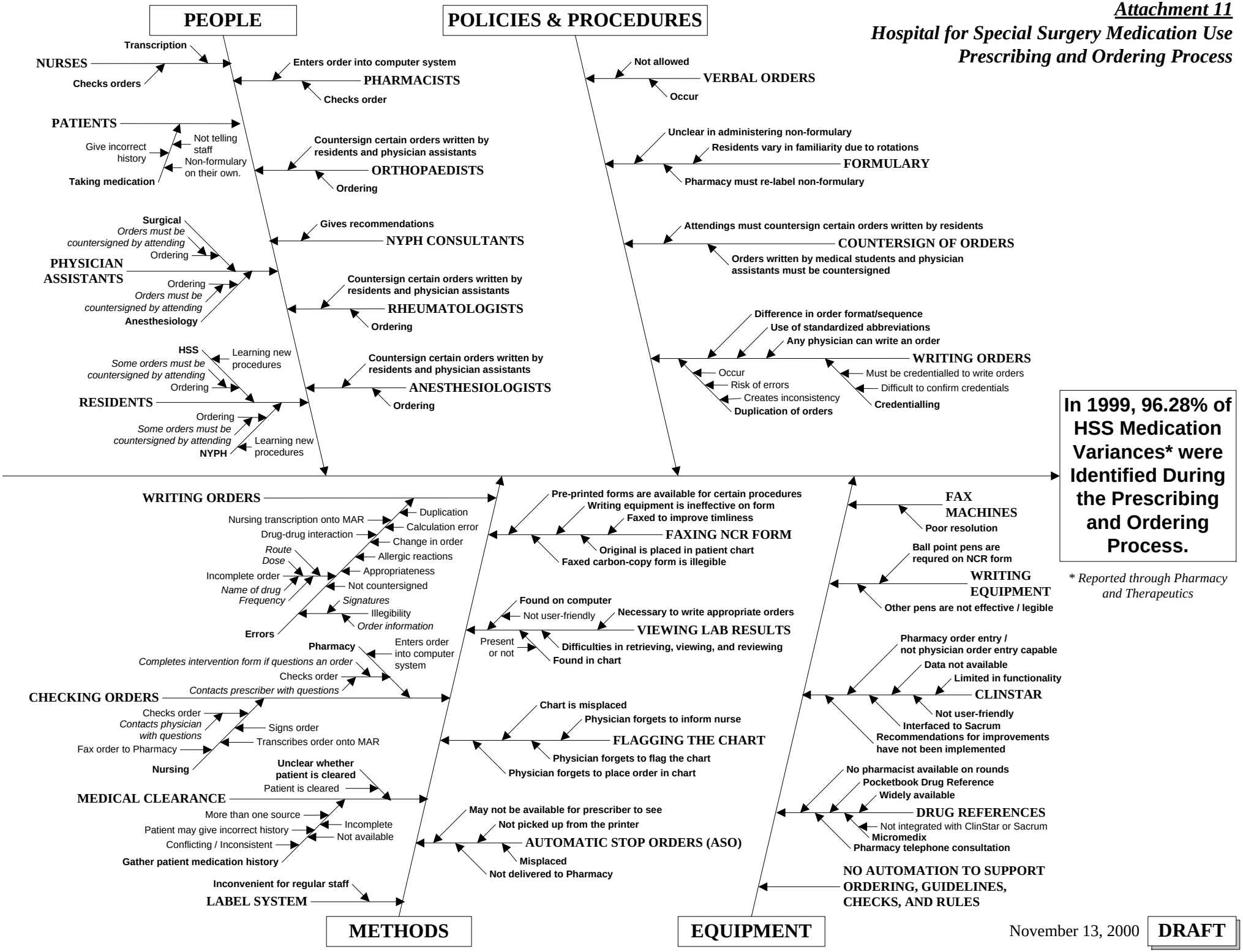
- Signal 1 / Cardiac Arrest / Asystole / Death

November 13, 2000 **DRAFT**


PRESCRIBING AND ORDERING
PREPARING AND DISPENSING
HSS Medication Use
ADMINISTRATION
MONITORING

Attachment 11

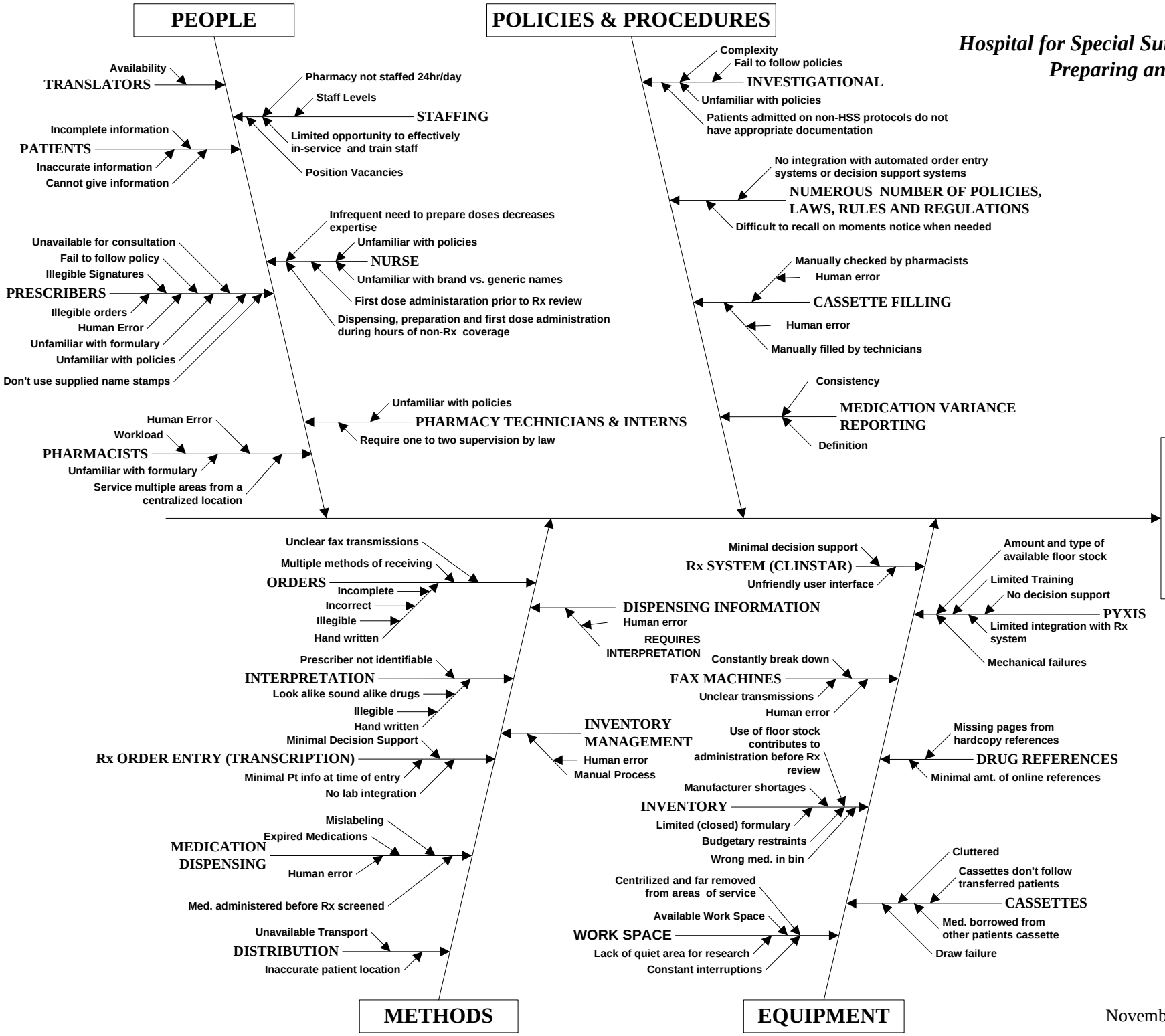
Hospital for Special Surgery Medication Use
Prescribing and Ordering Process



November 13, 2000 **DRAFT**

Attachment 12

Hospital for Special Surgery Medication Use
Preparing and Dispensing Process



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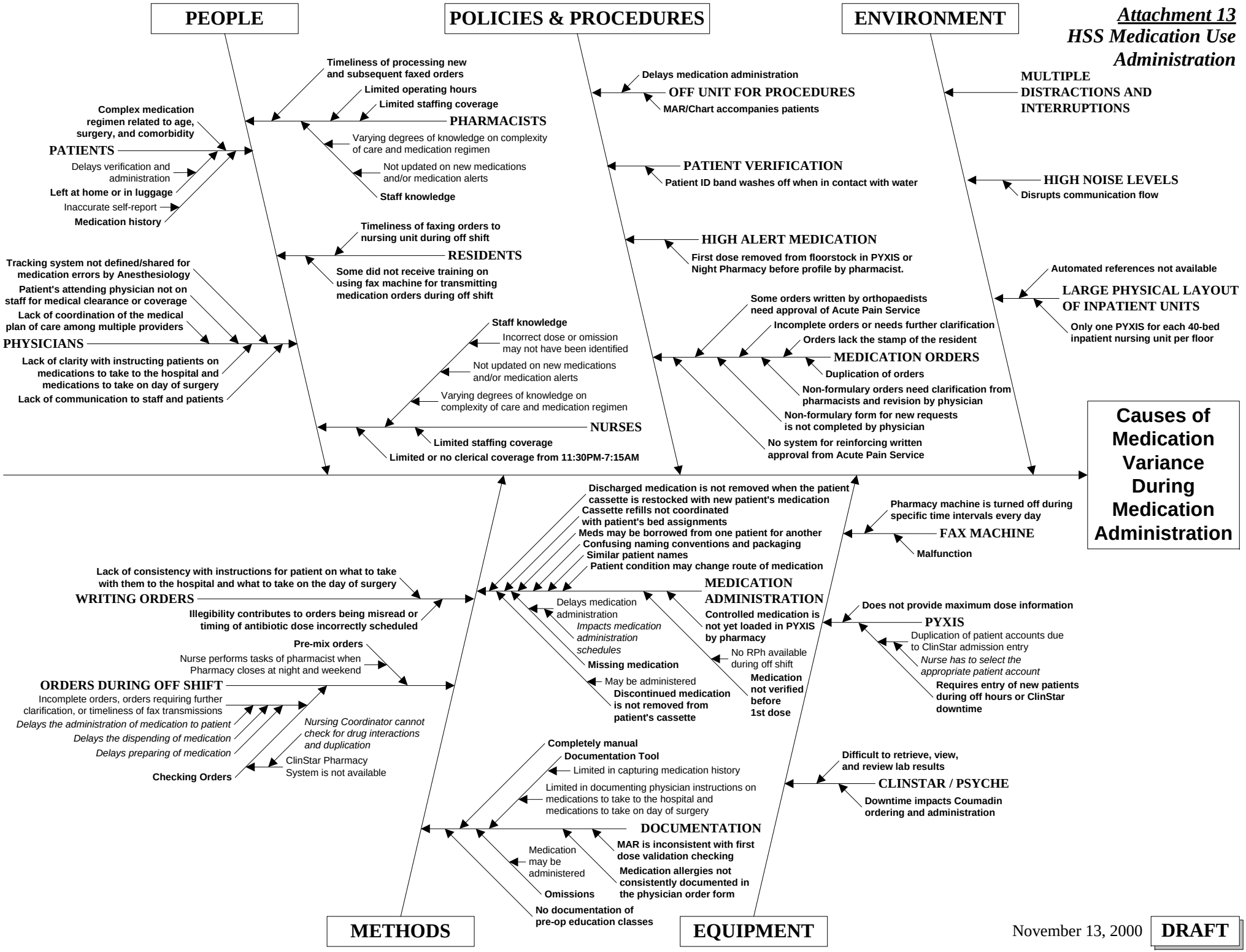
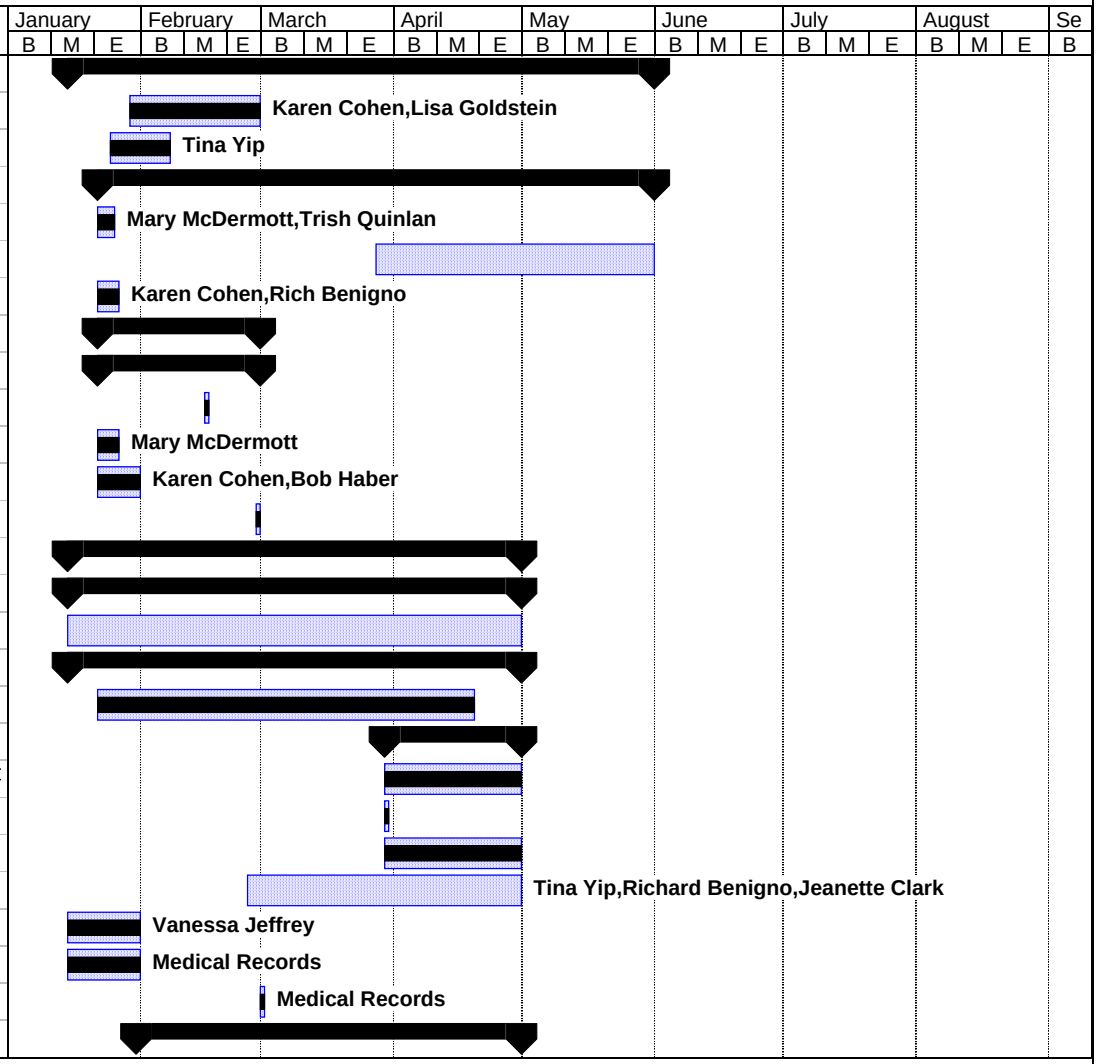

Attachment 13
HSS Medication Use Administration
PEOPLE
POLICIES & PROCEDURES
ENVIRONMENT
Causes of Medication Variance During Medication Administration
METHODS
EQUIPMENT
Timeliness of processing new and subsequent faxed orders
Limited operating hours
Limited staffing coverage
PHARMACISTS
Varying degrees of knowledge on complexity of care and medication regimen
Not updated on new medications and/or medication alerts
Staff knowledge
Complex medication regimen related to age, surgery, and comorbidity
PATIENTS
Delays verification and administration
Left at home or in luggage
Inaccurate self-report
Medication history
Timeliness of faxing orders to nursing unit during off shift
RESIDENTS
Some did not receive training on using fax machine for transmitting medication orders during off shift
Tracking system not defined/shared for medication errors by Anesthesiology
Patient's attending physician not on staff for medical clearance or coverage
Lack of coordination of the medical plan of care among multiple providers
PHYSICIANS
Lack of clarity with instructing patients on medications to take to the hospital and medications to take on day of surgery
Lack of communication to staff and patients
Staff knowledge
Incorrect dose or omission may not have been identified
Not updated on new medications and/or medication alerts
Varying degrees of knowledge on complexity of care and medication regimen
NURSES
Limited staffing coverage
Limited or no clerical coverage from 11:30PM-7:15AM
Delays medication administration
OFF UNIT FOR PROCEDURES
MAR/Chart accompanies patients
PATIENT VERIFICATION
Patient ID band washes off when in contact with water
HIGH ALERT MEDICATION
First dose removed from floorstock in PYXIS or Night Pharmacy before profile by pharmacist.
Some orders written by orthopaedists need approval of Acute Pain Service
Incomplete orders or needs further clarification
Orders lack the stamp of the resident
MEDICATION ORDERS
Duplication of orders
Non-formulary orders need clarification from pharmacists and revision by physician
Non-formulary form for new requests is not completed by physician
No system for reinforcing written approval from Acute Pain Service
MULTIPLE DISTRACTIONS AND INTERRUPTIONS
HIGH NOISE LEVELS
Disrupts communication flow
Automated references not available
LARGE PHYSICAL LAYOUT OF INPATIENT UNITS
Only one PYXIS for each 40-bed inpatient nursing unit per floor
Discharged medication is not removed when the patient cassette is restocked with new patient's medication
Cassette refills not coordinated with patient's bed assignments
Meds may be borrowed from one patient for another
Confusing naming conventions and packaging
Similar patient names
Patient condition may change route of medication
MEDICATION ADMINISTRATION
Delays medication administration
Impacts medication administration schedules
Missing medication
May be administered
Discontinued medication is not removed from patient's cassette
Controlled medication is not yet loaded in PYXIS by pharmacy
No RPh available during off shift
Medication not verified before 1st dose
Pharmacy machine is turned off during specific time intervals every day
FAX MACHINE
Malfunction
Does not provide maximum dose information
PYXIS
Duplication of patient accounts due to ClinStar admission entry
Nurse has to select the appropriate patient account
Requires entry of new patients during off hours or ClinStar downtime
Lack of consistency with instructions for patient on what to take with them to the hospital and what to take on the day of surgery
WRITING ORDERS
Illegibility contributes to orders being misread or timing of antibiotic dose incorrectly scheduled
Pre-mix orders
Nurse performs tasks of pharmacist when Pharmacy closes at night and weekend
ORDERS DURING OFF SHIFT
Incomplete orders, orders requiring further clarification, or timeliness of fax transmissions
Delays the administration of medication to patient
Delays the dispending of medication
Delays preparing of medication
Checking Orders
Nursing Coordinator cannot check for drug interactions and duplication
ClinStar Pharmacy System is not available
Completely manual
Documentation Tool
Limited in capturing medication history
Limited in documenting physician instructions on medications to take to the hospital and medications to take on day of surgery
DOCUMENTATION
MAR is inconsistent with first dose validation checking
Medication allergies not consistently documented in the physician order form
Medication may be administered
Omissions
No documentation of pre-op education classes
Difficult to retrieve, view, and review lab results
CLINSTAR / PSYCHE
Downtime impacts Coumadin ordering and administration
November 13, 2000
DRAFT

Clinical Patient Safety PIT
Medication Use Process: Prescribing and Ordering Action Plan
Draft

ID	Task Name
1	**Improve Order Legibility**
2	Communicate issues with Drs. Warren, Sculco and Paget
3	Brief Dr. Kagen
4	**Continue to collect and report statistics**
5	6E: Collection and analysis (3-day study) of illegible orders
6	6E: Monthly study of illegible orders (3 day) x 3 months
7	Study charts of illegible original orders from Nov.
8	**Implement 100% Utilization of Ball Point Pens**
9	**Develop and Implement Campaign**
10	Make announcement at Friday Morning Conference
11	Order Pens for All Nursing Units
12	Create Signs for Nursing Units
13	Roll out pens and signs on nursing units
14	**Implement 100%Utilization of MD 3-digit code**
15	**Analyze MD response time re illegible orders**
16	Pharmacy to collect response time statistics
17	**Discuss options with Med Rec**
18	Determine number of digits
19	**Determine impact of digit change**
20	Cactus, Eagle, Surgiware, Clinstar, Psyche, Windc
21	DEA
22	Contact software vendors and make necessary ch
23	Revise procedures re use of codes
24	Evaluate use of Name Stamp
25	MR to update MD code reference book
26	Distribute new reference books to all units & Pharmacy
27	**Determine feasibility of distributing ID codes via**

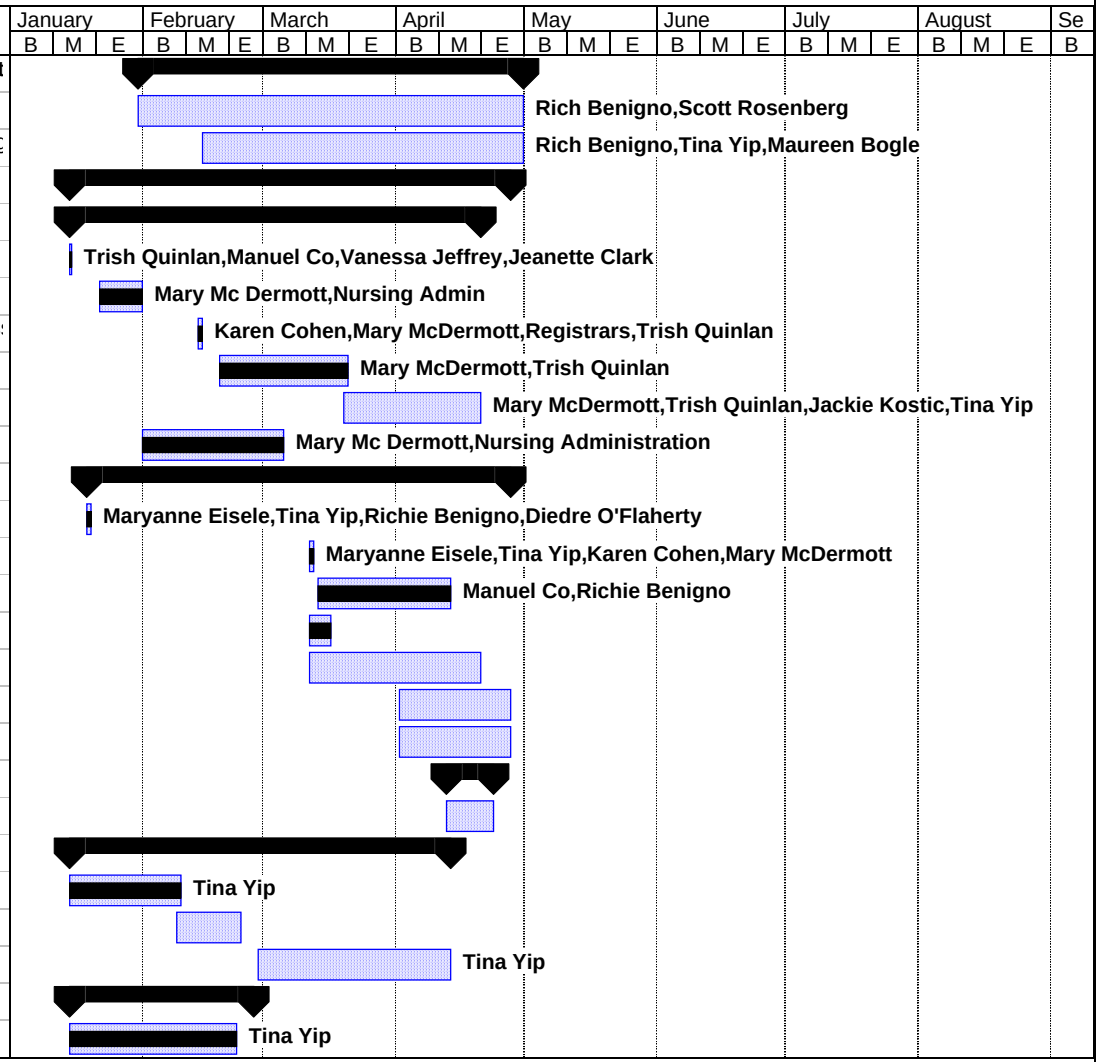


Project: PrescOrdWkplan_1-15-01
Date: Thu 10/21/04

Task
Split
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Split
Rolled Up Milestone
Rolled Up Progress
External Tasks
Project Summary
External Milestone
Deadline

Clinical Patient Safety PIT
Medication Use Process: Prescribing and Ordering Action Plan
Draft

ID	Task Name	Resource Names
28	**Scanned pictures with signatures/codes via Int**	
29	Define secured approach	Rich Benigno,Scott Rosenberg
30	Work with Pharmacy and Credentialing for sig	Rich Benigno,Tina Yip,Maureen Bogle
31	**Improve procedure for sending orders to pharmacy**	
32	**Evaluate possibility of faxing original copy**	
33	Determine legal implications	Trish Quinlan,Manuel Co,Vanessa Jeffrey,Jeanette Clark
34	Assess D/E work flow @ nsg. Units	Mary Mc Dermott,Nursing Admin
35	Conduct focus group w/ unit registrars re faxing proces	Karen Cohen,Mary McDermott,Registrars,Trish Quinlan
36	Review findings with Nursing Administration	Mary McDermott,Trish Quinlan
37	Finalize process improvement recommendations	Mary McDermott,Trish Quinlan,Jackie Kostic,Tina Yip
38	Determine need for construction	Mary Mc Dermott,Nursing Administration
39	**Replace Fax Machines**	
40	Process p.o. for new fax on 6E and Pharmacy	Maryanne Eisele,Tina Yip,Richie Benigno,Diedre O'Flaherty
41	Review plans with 6E Nurse Manager	Maryanne Eisele,Tina Yip,Karen Cohen,Mary McDermott
42	1 month Pilot on 6E	Manuel Co,Richie Benigno
43	Set up machines to reflect optimum workflow	
44	Evaluate improvements	
45	Evaluate technology	
46	Revise procedure to maximize efficiency	
47	**House-wide roll-out plan**	
48	5E	
49	**If Needed, Improve Quality of NCR Forms**	
50	Discuss options with Materiels/vendor	Tina Yip
51	Select new form ('plan B')	
52	Order improved quality form	Tina Yip
53	**Evaluate Pyxis Connect**	
54	Negotiate 30 day pilot with vendor	Tina Yip

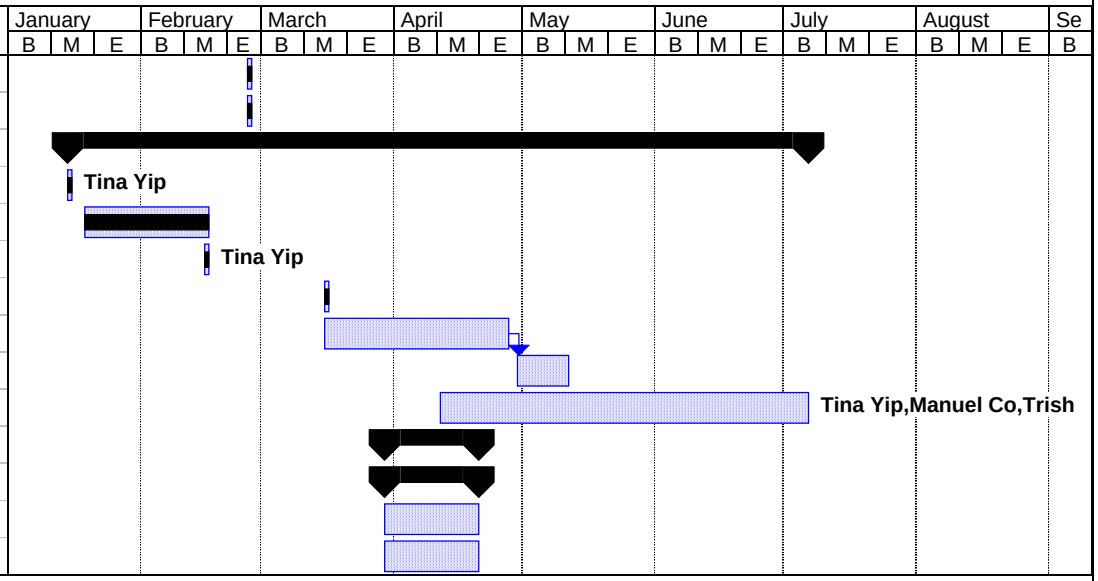


Project: PrescOrdWkplan_1-15-01
Date: Thu 10/21/04

Task	Rolled Up Task	Project Summary
Split	Rolled Up Split	External Milestone
Progress	Rolled Up Milestone	Deadline
Milestone	Rolled Up Progress	
Summary	External Tasks	

Clinical Patient Safety PIT
Medication Use Process: Prescribing and Ordering Action Plan
Draft

ID	Task Name
55	Determine appropriate nursing unit for pilot: 6E vs. 7E
56	Accept or reject negotiation terms
57	**Improve standardization of ordering nomenclature**
58	Create policy including best practice standards
59	Present to P&T for review/revise
60	Present to P&T for approval
61	P&T to review minutes
62	Medical Board Approval
63	Distribute to House and Medical Staff
64	Develop MD/RN Legibility & Standards Education Program
65	**Determine next process to improve**
66	**ISMP Consult**
67	Write-up nursing and pharmacy action plans
68	Recommend priorities to PIT team



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Task		Rolled Up Task		Project Summary	
Split		Rolled Up Split		External Milestone	
Progress		Rolled Up Milestone		Deadline	
Milestone		Rolled Up Progress			
Summary		External Tasks			

Hospital for Special Surgery
Department of Pharmacy
Confidential

Attachment 15